

10/594282

***** QUERY RESULTS *****

(STRUCTURE SEARCH - COMPOUND ON CLAIM 43 & 46)

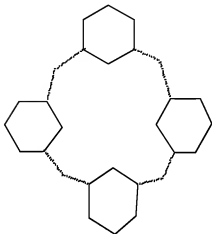
=> d his l21

(FILE 'HCAPLUS' ENTERED AT 11:47:19 ON 19 MAY 2009)

L21 2 S L19 AND L10

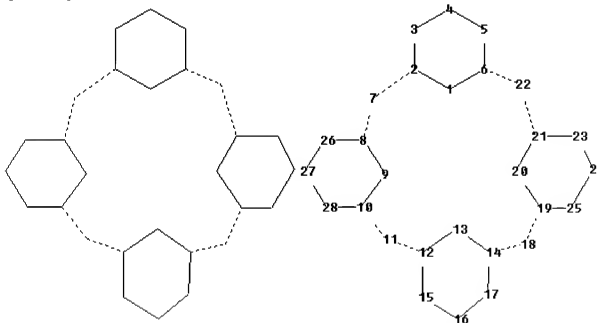
=> d que l21

L3 STR



Structure attributes must be viewed using STN Express query preparation:

Uploading L2.str



ring nodes :

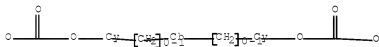
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
24 25 26 27 28

10/594282

ring bonds :
 1-2 1-6 2-3 2-7 3-4 4-5 5-6 6-22 7-8 8-9 8-26 9-10 10-11 10-28 11-12
 12-13 12-15 13-14 14-17 14-18 15-16 16-17 18-19 19-20 19-25 20-21 21-22
 21-23 23-24
 24-25 26-27 27-28
 exact/norm bonds :
 2-7 6-22 7-8 10-11 11-12 14-18 18-19 21-22
 normalized bonds :
 1-2 1-6 2-3 3-4 4-5 5-6 8-9 8-26 9-10 10-28 12-13 12-15 13-14 14-17
 15-16 16-17 19-20 19-25 20-21 21-23 23-24 24-25 26-27 27-28
 isolated ring systems :
 containing 1 :

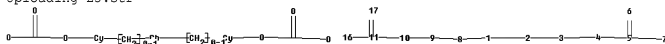
Match level :
 1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom
 11:Atom 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom
 20:Atom 21:Atom
 22:Atom 23:Atom 24:Atom 25:Atom 26:Atom 27:Atom 28:Atom

L5 17874 SEA FILE=REGISTRY SSS FUL L3
 L10 QUE ABB=ON PLU=ON RESIST OR RESIST# OR PHOTORESIST? OR
 PHOTO (2A) RESIST?
 L16 STR



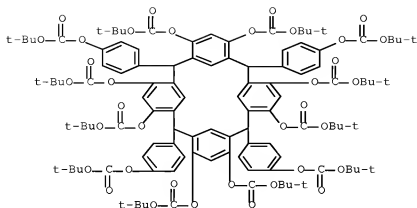
Structure attributes must be viewed using SIN Express query preparation:

Uploading L3.str



chain nodes :
 1 2 3 4 5 6 7 8 9 10 11 16 17
 chain bonds :
 1-2 1-8 2-3 3-4 4-5 5-6 5-7 8-9 9-10 10-11 11-16 11-17
 exact/norm bonds :
 2-3 3-4 4-5 5-6 5-7 8-9 9-10 10-11 11-16 11-17
 exact bonds :
 1-2 1-8

Match level :
 1:Atom 2:CLASS 3:Atom 4:CLASS 5:CLASS 6:CLASS 7:CLASS 8:CLASS 9:Atom
 10:CLASS
 11:CLASS 16:CLASS 17:CLASS
 Generic attributes :
 3:



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST calix resorcinarene deriv high resoln resist supercrit carbon dioxide

IT Photoresists
(calix[4]resorcinarene derivs. as high-resolution resist materials for supercrit. CO2 processing)

IT 124-38-9, Carbon dioxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(calix[4]resorcinarene derivs. as high-resolution resist materials for supercrit. CO2 processing)

IT 65338-98-9 129831-85-2 176897-13-5 181231-12-9 250715-31-2
623159-14-8 649720-85-4 929207-68-1 929209-81-4
1034474-84-4 1034474-85-5 1034474-86-6
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(calix[4]resorcinarene derivs. as high-resolution resist materials for supercrit. CO2 processing)

IT 1034474-83-3P 1034474-87-7P
RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(calix[4]resorcinarene derivs. as high-resolution resist materials for supercrit. CO2 processing)

REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L21 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2003:879781 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 139:388462

TITLE: tert-Butoxycarbonylalkoxycalixresorcinarenes having high solubility in casting solvents and radiation-sensitive positive resists containing the same

INVENTOR(S): Nishikubo, Tadaomi; Kudo, Hiroto

PATENT ASSIGNEE(S): JSR Ltd., Japan; Kanagawa University

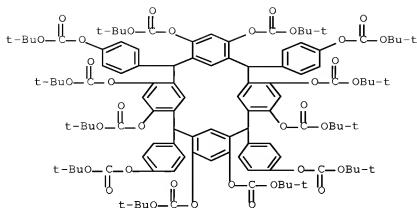
SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

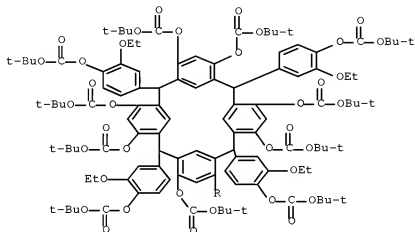
PATENT INFORMATION:



RN 623159-15-9 HCAPLUS

CN Carbonic acid, 2,8,14,20-tetrakis[4-[[[(1,1-dimethylethoxy)carbonyl]oxy]-3-ethoxyphenyl]pentacyclo[19.3.1.13,7.19,13.115,19]octacosal(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octayl octakis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IC ICM C07C069-712
ICS C08G061-02; G03F007-039; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 25

ST butoxycarbonylalkoxy calixresorcinarene chem amplified pos photoresist; radiation sensitive resist
butoxycarbonylalkoxy calixresorcinarene solvent soly

IT Metacyclophanes
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(calixarenes; tert-butoxycarbonylalkoxycalixresorcinarenes having high solvent solubility for liable pos.-working radiation-sensitive resists)

IT Resists
(radiation-sensitive; tert-butoxycarbonylalkoxycalixresorcinarenes having high solvent solubility for liable pos.-working radiation-sensitive resists)

IT Positive photoresists
(tert-butoxycarbonylalkoxycalixresorcinarenes having high solvent solubility for liable pos.-working radiation-sensitive resists)

IT 74227-35-3
RL: CAT (Catalyst use); TEM (Technical or engineered material use); USES (Uses)
(acid generators; tert-butoxycarbonylalkoxycalixresorcinarenes having high solvent solubility for liable pos.-working radiation-sensitive resists)

IT 65338-98-9P 176897-13-5P 182370-80-5P 203714-14-1P 623159-00-2P 623159-02-4P 623159-03-5P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(tert-butoxycarbonylalkoxycalixresorcinarenes having high solvent solubility for liable pos.-working radiation-sensitive resists)

IT 623159-05-7P 623159-06-8P 623159-07-9P 623159-08-0P 623159-10-4P 623159-12-6P 623159-13-7P 623159-14-8P 623159-15-9P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(tert-butoxycarbonylalkoxycalixresorcinarenes having high solvent solubility for liable pos.-working radiation-sensitive resists)

IT 108-46-3, Resorcinol, reactions 112-44-7, Undecanal 121-32-4, Ethylvanillin 123-08-0, p-Hydroxybenzaldehyde 123-63-7 629-76-5, Pentadecanol 629-90-3, Heptadecanal 1454-85-9, 1-Heptadecanol 2765-11-9, Pentadecanal 5292-43-3, Tert-Butyl bromoacetate 10486-19-8, Tridecanal 24424-99-5, Di-tert-butyl dicarbonate
RL: RCT (Reactant); RACT (Reactant or reagent)
(tert-butoxycarbonylalkoxycalixresorcinarenes having high solvent solubility for liable pos.-working radiation-sensitive resists)

10/594282

***** QUERY RESULTS *****

(STRUCTURE AND TEXT SEARCH - COMPOUND IN CLAIM 43 & 46)

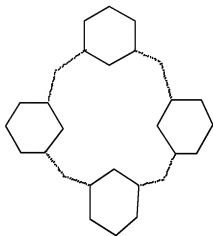
=> d his 122

(FILE 'HCAPLUS' ENTERED AT 11:47:19 ON 19 MAY 2009)

L22 20 S L20 NOT L21

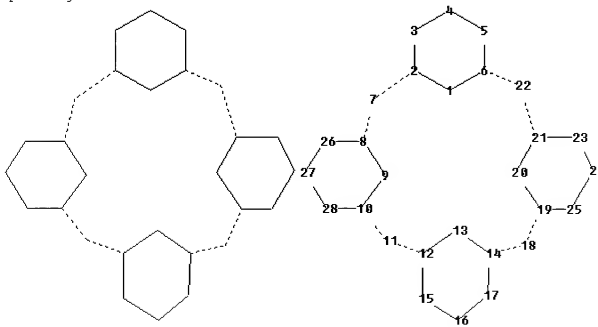
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L3 STR



Structure attributes must be viewed using SIN Express query preparation:

Uploading L2.str



ring nodes :

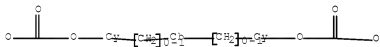
10/594282

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
 24 25 26 27 28
 ring bonds :
 1-2 1-6 2-3 2-7 3-4 4-5 5-6 6-22 7-8 8-9 8-26 9-10 10-11 10-28 11-12
 12-13 12-15 13-14 14-17 14-18 15-16 16-17 18-19 19-20 19-25 20-21 21-22
 21-23 23-24
 24-25 26-27 27-28
 exact/norm bonds :
 2-7 6-22 7-8 10-11 11-12 14-18 18-19 21-22
 normalized bonds :
 1-2 1-6 2-3 3-4 4-5 5-6 8-9 8-26 9-10 10-28 12-13 12-15 13-14 14-17
 15-16 16-17 19-20 19-25 20-21 21-23 23-24 24-25 26-27 27-28
 isolated ring systems :
 containing 1 :

Match level :

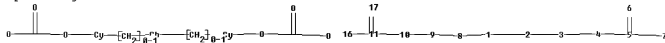
1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom
 11:Atom 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom
 20:Atom 21:Atom
 22:Atom 23:Atom 24:Atom 25:Atom 26:Atom 27:Atom 28:Atom

L5 17874 SEA FILE=REGISTRY SSS FUL L3
 L9 6250 SEA FILE=HCAPLUS ABB=ON PLU=ON L5
 L10 QUE ABB=ON PLU=ON RESIST OR RESIST# OR PHOTORESIST? OR
 PHOTO (2A) RESIST?
 L11 89 SEA FILE=HCAPLUS ABB=ON PLU=ON L9 (L) L10
 L12 3317 SEA FILE=HCAPLUS ABB=ON PLU=ON L9 (L) PREP+ALL/RL
 L13 3706 SEA FILE=HCAPLUS ABB=ON PLU=ON L9 (L) RACT/RL
 L14 33 SEA FILE=HCAPLUS ABB=ON PLU=ON L11 AND L12 AND L13
 L15 21 SEA FILE=HCAPLUS ABB=ON PLU=ON L14 AND (AY<2006 OR PY<2006
 OR PRY<2006)
 L16 STR



Structure attributes must be viewed using STN Express query preparation:

Uploading L3.str



chain nodes :

1 2 3 4 5 6 7 8 9 10 11 16 17

chain bonds :

1-2 1-8 2-3 3-4 4-5 5-6 5-7 8-9 9-10 10-11 11-16 11-17

exact/norm bonds :

2-3 3-4 4-5 5-6 5-7 8-9 9-10 10-11 11-16 11-17

exact bonds :

1-2 1-8

Match level :

1:Atom 2:CLASS 3:Atom 4:CLASS 5:CLASS 6:CLASS 7:CLASS 8:CLASS 9:Atom
10:CLASS

11:CLASS 16:CLASS 17:CLASS

Generic attributes :

3:

Saturation : Unsaturated

9:

Saturation : Unsaturated

L18 2 SEA FILE=REGISTRY SUB=L5 SSS FUL L16
 L19 2 SEA FILE=HCAPLUS ABB=ON PLU=ON L18
 L20 21 SEA FILE=HCAPLUS ABB=ON PLU=ON L15 AND L10
 L21 2 SEA FILE=HCAPLUS ABB=ON PLU=ON L19 AND L10
 L22 20 SEA FILE=HCAPLUS ABB=ON PLU=ON L20 NOT L21

=> d l22 1-20 ibib abs hitstr hitind

L22 ANSWER 1 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2005:1123873 HCAPLUS Full-text

DOCUMENT NUMBER: 143:413494

TITLE: Calixresorcinarene compounds, photoresist
base materials, and compositions thereofINVENTOR(S): Ishii, Hirotooshi; Owada, Takanori; Shibasaki, Yuzi;
Ueda, Mitsuru

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: PCT Int. Appl., 52 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

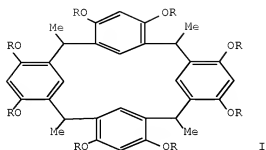
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005097725	A1	20051020	WO 2005-JP6512	20050401 <--
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG			
EP 1734032	A1	20061220	EP 2005-728046	20050401 <--
R:	BE, DE, FR, GB			
CN 1938259	A	20070328	CN 2005-80010812	20050401 <--
US 20070190451	A1	20070816	US 2006-594282	20060926 <--
KR 2007003980	A	20070105	KR 2006-720033	20060927 <--
PRIORITY APPLN. INFO.:			JP 2004-111459	A 20040405 <--

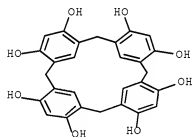
JP 2004-111460
WO 2005-JP6512

A 20040405 <--
W 20050401 <--

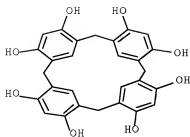
OTHER SOURCE(S): MARPAT 143:413494
GI



- AB Disclosed are calixresorcinarene comps. (I: wherein R = h, 1-tetrahydropyranyl, 1-tetrahydrofuranyl, organic moiety having 2-methyl-2-adamantyloxycarbonylmethyl groups, etc.), use of I as resist base material, and resist comps. containing I. The comps. are useful for nanofabrication with extreme UV rays or electron beam.
- IT 125748-07-4DF, reaction products with bromoacetic acid esters
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(synthesis and use as radiation resists for nano-fabrication)
- RN 125748-07-4 HCAPLUS
- CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octol (CA INDEX NAME)



- IT 125748-07-4P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(synthesis and use for radiation resist base materials)
- RN 125748-07-4 HCAPLUS
- CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octol (CA INDEX NAME)



IC ICM C07C067-31
ICS C07C069-712; G03F007-039; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 23

ST calixresorcinarene deriv radiation resist nanofabrication

IT Photoresists
(UV; calixresorcinarene derivs. for resist base materials for nano-fabrication)

IT Electron beam resists
(calixresorcinarene derivs. for resist base materials for nano-fabrication)

IT Lithography
(submicron; radiation resist composition containing calixresorcinarene derivs. for)

IT 280-57-9, 1,4-Diazabicyclo[2.2.2]octane 66003-78-9
RL: TEM (Technical or engineered material use); USES (Uses)
(radiation resist composition containing calixresorcinarene derivs. and)

IT 108-46-3, Resorcinol, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with acetaldehyde in synthesis of calixresorcinarene derivs. for radiation resist)

IT 75-07-0, Acetaldehyde, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with resorcinol in synthesis of calixresorcinarene derivs. for radiation resist)

IT 5292-43-3DP, tert-Butyl bromoacetate, reaction product with calixresorcinarene 125748-07-4DP, reaction products with bromoacetic acid esters 625122-37-4DP, reaction product with calixresorcinarene
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(synthesis and use as radiation resists for nano-fabrication)

IT 125748-07-4P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(synthesis and use for radiation resist base materials)

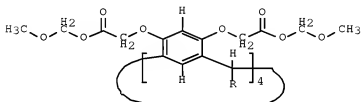
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 2 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN
ACCESSION NUMBER: 2005:563698 HCAPLUS [Full-text](#)
DOCUMENT NUMBER: 143:106359
TITLE: Acid-labile acetal group-containing
calix[4]resorcinarenes and chemically amplified

10/594282

resists containing them
 INVENTOR(S): Nishikubo, Tadaomi; Kudo, Hiroto
 PATENT ASSIGNEE(S): JSR Ltd., Japan; Kanagawa University
 SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005170902	A	20050630	JP 2003-416509	20031215 <--
PRIORITY APPLN. INFO.: GI			JP 2003-416509	20031215 <--



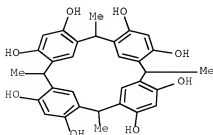
I

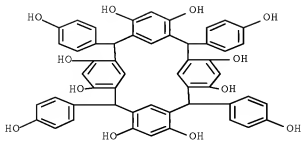
AB The calix[4]resorcinarenes are I (R = Me, 4-MeOCH₂O₂CCH₂O₂C₆H₄). The resists contain I and photoacid generators. The I show good solubility in casting solvents, and good resistance to heat and alkali developers, resulting in forming high-resolution patterns.

IT 65338-98-9P 130508-38-2P 171799-35-2P
 176897-13-5P 710970-56-2P 830329-32-3P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (acid-labile acetal group-containing calixresorcinarenes for chemical amplified resists)

RN 65338-98-9 HCAPLUS

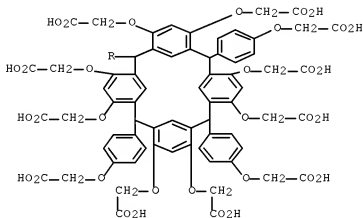
CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacosane-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl- (CA INDEX NAME)



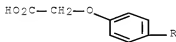


CN Acetic acid, 2,2',2'',2'''',2''''',2''''''',2''''''''-[2,8,14,20-tetrakis[4-(carboxymethoxy)phenyl]pentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecene-4,6,10,12,16,18,22-octayl]octakis(oxy) octakis- (CA INDEX NAME)

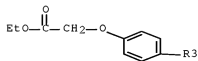
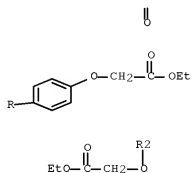
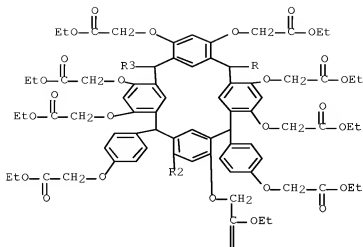
PAGE 1-A



PAGE 2-A



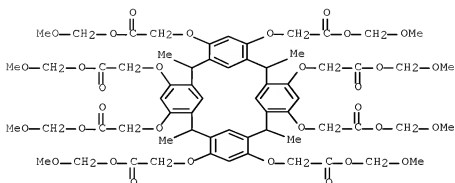
CN Acetic acid, 2,2',2'',2''',2'''',2''''',2''''',2''''',2''''',2'''''-[[2,8,14,20-tetrakis[4-(2-ethoxy-2-oxoethoxy)phenyl]pentacyclo[19.3.1.13.7,19,13.115,1
9]octacos-1(25),3,5,7-(28),9,11,13(27),15,17,19(26),21,23-dodecaene-
4,6,10,12,16,18,22,24-octalyl]octakis(oxy)]octakis-, octaethyl ester (CA
INDEX NAME)



IT	830329-30-1P 830329-31-2P
	RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
	(acid-labile acetal group-containing calixresorcinarenes for chemical amplified resists)
RN	830329-30-1 HCAPLUS
CN	Acetic acid, 2,2',2'',2''',2''''',2''''''',2''''''''-[(2,8,14,20-tetramethylpentacyclo[19.3.1.13,7.19,13.115,19]octacos-

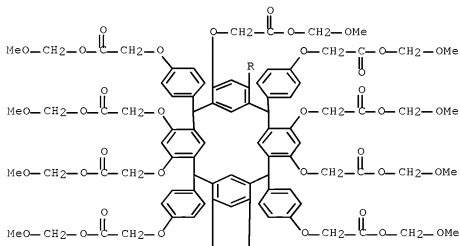
10/594282

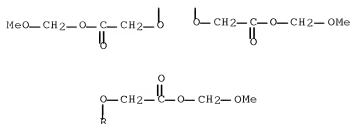
1(25), 3, 5, 7(28), 9, 11, 13(27), 15, 17, 19(26), 21, 23-dodecaene-
4, 6, 10, 12, 16, 18, 22, 24-octayl)octakis(oxy)octakis-, octakis(methoxymethyl)
ester (9CI) (CA INDEX NAME)



RN 830329-31-2 HCAPLUS
CN Acetic acid, 2,2',2'',2''',2''''',2''''',2''''',2''''''-[2,8,14,20-
tetrakis[4-[2-(methoxymethoxy)-2-
oxoethoxy]phenyl]pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
1(25), 3, 5, 7(28), 9, 11, 13(27), 15, 17, 19(26), 21, 23-dodecaene-
4, 6, 10, 12, 16, 18, 22, 24-octayl)octakis(oxy)octakis-, octakis(methoxymethyl)
ester (9CI) (CA INDEX NAME)

PAGE 1-A





IC ICM C07C069-736
ICS G03F007-039; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 25

ST acetal calixresorcinarene chem amplified resist

IT Resists
(radiation-sensitive; acid-labile acetal group-containing calixresorcinarenes for chemical amplified resists)

IT 65338-98-9P 130508-38-2P 171799-35-2P
176897-13-5P 710970-56-2P 830329-32-3P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(acid-labile acetal group-containing calixresorcinarenes for chemical amplified resists)

IT 830329-30-1P 830329-31-2P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(acid-labile acetal group-containing calixresorcinarenes for chemical amplified resists)

IT 105-36-2, Ethyl bromoacetate 107-30-2, Chloromethyl methyl ether
108-46-3, Resorcinol, reactions 123-08-0, p-Hydroxybenzaldehyde
123-63-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(acid-labile acetal group-containing calixresorcinarenes for chemical amplified resists)

L22 ANSWER 3 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2005:253630 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 142:345148

TITLE: Photorealist, its purification and photorealist composition showing improved sensitivity, contrast, and line-edge-roughness to extreme UV

INVENTOR(S): Ueda, Mitsuru; Ishii, Hirohisa

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 32 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005075767	A	20050324	JP 2003-307443	20030829 <--

PRIORITY APPLN. INFO.:

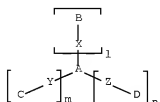
JP 2003-307443

20030829 <--

OTHER SOURCE(S):

MARPAT 142:345148

GI



I

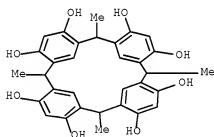
AB The title photoresist comprises an extreme UV light-reactive organic compound represented by I (A = C1-50-aliphatic, C6-50-aromatic, etc.; B, C, D = extreme UV light-reactive group-containing C1-50-aliphatic, C6-50-aromatic, etc.; X, Y, Z = single bond, ether linkage; l, m, n = 0-5) and ≤10 ppm of basic impurities. The chemical amplified photoresist composition is sensitive to extreme UV and electron beam.

IT 65338-98-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (photoresist preparation; photoresist, its purification and photoresist composition showing improved sensitivity, contrast, and line-edge-roughness to extreme UV)

RN 65338-98-9 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl- (CA INDEX NAME)

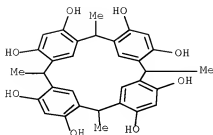


IT 65338-98-9DP, reaction product with tert-Butylbromoacetate

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (photoresist preparation; photoresist, its purification and photoresist composition showing improved sensitivity, contrast, and line-edge-roughness to extreme UV)

RN 65338-98-9 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl- (CA INDEX NAME)



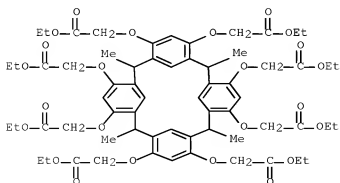
- IC ICM C07C069-736
ICS C07C067-56; G03F007-004; G03F007-039; H01L021-027
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38, 73, 76
- ST photoresist purifn compn extreme UV lithog
- IT Photoresists
(photoresist, its purification and photoresist composition showing improved sensitivity, contrast, and line-edge-roughness to extreme UV)
- IT 282713-83-1
RL: CAT (Catalyst use); USES (Uses)
(photoacid generator; photoresist, its purification and photoresist composition showing improved sensitivity, contrast, and line-edge-roughness to extreme UV)
- IT 75-07-0, Acetaldehyde, reactions 108-46-3, Resorcinol, reactions 5292-43-3D, tert-Butylbromoacetate, reaction products with C-Methylcalix[4]resorcinarene.
RL: RCT (Reactant); RACT (Reactant or reagent)
(photoresist preparation; photoresist, its purification and photoresist composition showing improved sensitivity, contrast, and line-edge-roughness to extreme UV)
- IT 65338-98-9P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(photoresist preparation; photoresist, its purification and photoresist composition showing improved sensitivity, contrast, and line-edge-roughness to extreme UV)
- IT 65338-98-9DP, reaction product with tert-Butylbromoacetate
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(photoresist preparation; photoresist, its purification and photoresist composition showing improved sensitivity, contrast, and line-edge-roughness to extreme UV)
- IT 24203-36-9, Potassium ion, processes
RL: REM (Removal or disposal); PROC (Process)
(photoresist, its purification and photoresist composition showing improved sensitivity, contrast, and line-edge-roughness to extreme UV)
- IT 97-64-3, Ethyl lactate 109-86-4, 2-Methoxyethanol
RL: NUU (Other use, unclassified); USES (Uses)
(solvent; photoresist, its purification and photoresist composition showing improved sensitivity, contrast, and line-edge-roughness to extreme UV)

L22 ANSWER 4 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 2004:1038016 HCAPLUS Full-text
 DOCUMENT NUMBER: 142:165419
 TITLE: Synthesis of novel chemically amplified materials based on calix[4]arene derivatives with acetal moieties
 AUTHOR(S): Kudo, Hiroto; Mitani, Kouji; Koyama, Syuhei; Nishikubo, Tadatomi
 CORPORATE SOURCE: Department of Applied Chemistry, Faculty of Engineering, Kanagawa University, Yokohama, 221-8686, Japan
 SOURCE: Bulletin of the Chemical Society of Japan (2004), 77(11), 2109-2114
 CODEN: BCSJAB; ISSN: 0009-2673
 PUBLISHER: Chemical Society of Japan
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 OTHER SOURCE(S): CASREACT 142:165419

AB The synthesis and photoinduced deprotection reaction of calix[4]resorcinarene derivs. with pendant acetal moieties were examined C-methyl[(methoxymethylcarbonyl)oxy]calix[4]resorcinarene (CRA-Acetal) and C-4-hydroxyphenyl[(methoxymethylcarbonyl)oxy]calix[4]resorcinarene (CRaph-Acetal) were prepared from C-methylcalix[4]resorcinarene (CRA) and C-4-hydroxyphenylcalix[4]resorcinarene (CRaph). The synthesized CRA-Acetal and CRaph-Acetal had good solubilities, good film-forming properties, and high thermal stabilities. The photoinduced deprotection reaction of CRA-Acetal and CRaph-Acetal was examined in the presence of bis[4-(diphenylsulfonio)phenyl]sulfide (DPSP) as a photoacid generator in the film state upon UV irradiation. It was found that the deprotection reaction of acetal groups of CRA-Acetal and CRaph-Acetal proceeded smoothly without further heating to produce the corresponding calixarene derivs., CRA-COOH and CRaph-COOH with carboxylic acid groups.

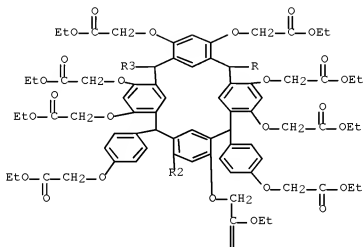
IT 171799-35-2P 830329-32-3P
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (hydrolysis in aqueous KOH solution)

RN 171799-35-2 HCAPLUS
 CN Acetic acid, 2,2',2'',2''',2''''',2''''',2''''''-[2,8,14,20-tetramethylpentacyclo[19.3.1.13.7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octayl]octakis(oxy)octakis-, 1,1',1'',1''',1''''',1''''',1''''''-octaethyl ester (CA INDEX NAME)

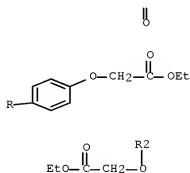


RN	830329-32-3	HCAPLUS
CN	Acetic acid, 2,2',2'',2''',2''''',2''''''',2'''''''''-[2,8,14,20-tetrakis[4-(2-ethoxy-2-oxoethoxy)phenyl]pentacyclo[19.3.1.13.7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octayl]octakis(oxy)octakis-, octaethyl ester (CA INDEX NAME)	

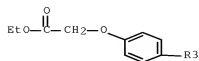
PAGE 1-A



PAGE 2-A



PAGE 3-A



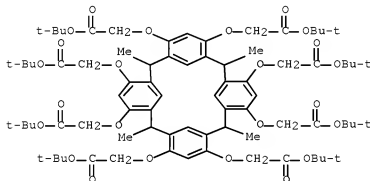
IT 623159-10-4 623159-12-6

RL: RCT (Reactant); RACT (Reactant or reagent)

(photoinduced deprotection of calix[4]resorcinarene derivs. with pendant acetal groups for chemical amplified photoresist applications)

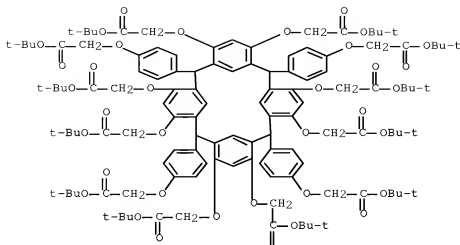
RN 623159-10-4 HCAPLUS

CN Acetic acid, 2',2'',2''',2'''',2''''',2'''''',2''''''',2'''''''-(2,8,14,20-tetramethylpentacyclo[19.3.1.13.7.19.13.115.19]octacosane-1(25),3(5),7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octalyl) octakis(oxy) octakis-, octakis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)

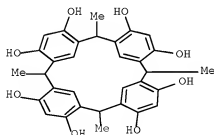


RN 623159-12-6 HCAPLUS

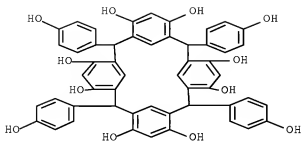
CN Acetic acid, 2',2'',2''',2'''',2''''',2''''',2''''''-[[2,8,14,20-tetrakis[4-[2-(1,1-dimethylethoxy)-2-oxoethyl]phenyl]pentacyclo[19.3.1.13.7.19,13.115,19]octacosal(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octayl]octakis(oxy)octakis-, octakis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



IT 65338-98-9 176897-13-5
 RL: PRP (Properties); RCT (Reactant); **FACT** (Reactant or reagent)
 (reaction with Et bromoacetate using K2CO3 in presence of TBAB as
 phase-transfer catalyst)
 RN 65338-98-9 HCAPLUS
 CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-
 4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl- (CA INDEX NAME)



RN 176897-13-5 HCAPLUS
 CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-
 4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetrakis(4-hydroxyphenyl)- (CA
 INDEX NAME)



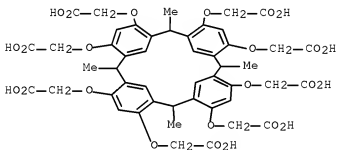
IT 130508-38-2P 710970-56-2P 830329-30-1P
830329-31-2P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation)
; PREP (Preparation); RACT (Reactant or reagent)

(synthesis and photoinduced deprotection of calix[4]resorcinarene
derivs. with pendant acetal groups for chemical amplified
photoresist applications)

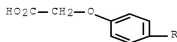
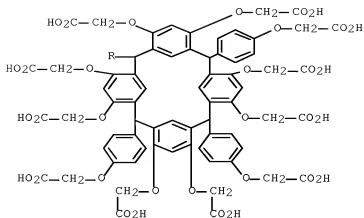
RN 130508-38-2 HCAPLUS

CN Acetic acid, 2,2',2'',2'''',2''''',2''''',2''''',2''''''-[(2,8,14,20-tetramethylpentacyclo[19.3.1.13,7.19.13,115,19]octacosane-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octavyl)octakis(oxv)]octakis- (CA INDEX NAME)



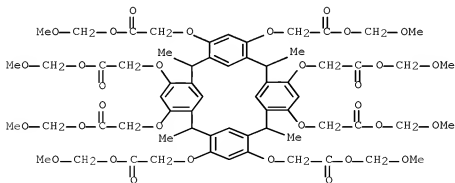
RN 710970-56-2 HCAPLUS

CN Acetic acid, 2,2',2'',2''',2'''',2''''',2''''',2''''''-[[2,8,14,20-tetrakis[4-(carboxymethoxy)phenyl]pentacyclo[19.3.1.13,7.19,13.115,19]octa-6,6,1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecene-4,10,12,16,18,22,24-octaval]octakis(oxy) octakis- (CA INDEX NAME)



RN 830329-30-1 HCAPLUS

CN	Acetic acid, 2,2',2'',2''',2'''',2''''',2''''',2''''',2''''',2'''''-[(2,8,14,20-tetramethylpentacyclo[19.3.1.1.3.7.19.13.115.19]octacos- 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene- 4,6,10,12,16,18,22,24-octyl)octakis(oxy)]octakis-, octakis(methoxymethyl) ester (9CI) (CA INDEX NAME)
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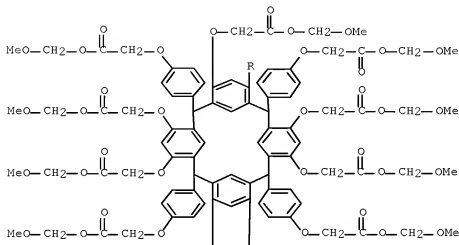


RN 830329-31-2 HCAPLUS

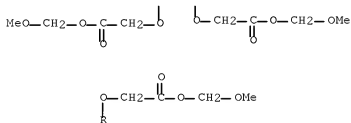
CN Acetic acid, 2,2',2'',2''',2'''',2''''',2''''',2''''''-[[2,8,14,20-tetrakis[4-[2-(methoxymethoxy)-2-oxoethoxy]phenyl]pentacyclo[19.3.1.13,7.19,13.115,19]octacos-

1(25), 3, 5, 7(28), 9, 11, 13(27), 15, 17, 19(26), 21, 23-dodecaene-
4, 6, 10, 12, 16, 18, 22, 24-octayl]octakis(oxy)octakis-, octakis(methoxymethyl)
ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
- ST synthesis photoinduced deprotection calixresorcinarene acetal deriv chem amplified photoresist
- IT Metacyclophanes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)
 (calixarenes; synthesis and photoinduced deprotection of calix[4]resorcinarene derivs. with pendant acetal groups for chemical amplified photoresist applications)
- IT Positive photoresists
 (chemical amplified; synthesis and photoinduced deprotection of calix[4]resorcinarene derivs. with pendant acetal groups for chemical amplified photoresist applications)
- IT Acetyl group

Photolysis
 (photoinduced deprotection of calix[4]resorcinarene derivs. with pendant acetal groups for chemical amplified photoresist applications)

IT Films
 (solubility and film-forming properties of calix[4]resorcinarene and its derivs. in relation to development of photoresists)

IT Thermal stability
 (synthesis and photoinduced deprotection of calix[4]resorcinarene derivs. with pendant acetal groups for chemical amplified photoresist applications)

IT 171799-35-2P 830329-32-3P
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation)
 ; PREP (Preparation); RACT (Reactant or reagent)
 (hydrolysis in aqueous KOH solution)

IT 74227-35-3, Bis[4-(diphenylsulfonio)phenyl]sulfide bis[hexafluorophosphate
 RL: PRP (Properties)
 (photoacid generator; photoinduced deprotection of calix[4]resorcinarene derivs. with pendant acetal groups for chemical amplified photoresist applications)

IT 623159-10-4 623159-12-6
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (photoinduced deprotection of calix[4]resorcinarene derivs. with pendant acetal groups for chemical amplified photoresist applications)

IT 65338-98-9 176897-13-5
 RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
 (reaction with Et bromoacetate using K2CO3 in presence of TBAB as phase-transfer catalyst)

IT 64-17-5, Ethanol, uses 67-63-0, 2-Propanol, uses 67-64-1, Acetone, uses 67-66-3, Chloroform, uses 67-68-5, DMSO, uses 68-12-2, DMF, uses 75-55-2, Tetramethylammonium hydroxide 97-54-3, Ethyl lactate 109-99-9, THF, uses 110-43-0, 2-Heptanone 110-54-3, Hexane, uses 110-82-7, Cyclohexane, uses 123-91-1, Dioxane, uses 127-19-5, Dimethyl acetamide 141-78-6, Ethyl acetate, uses 872-50-4, N-Methylpyrrolidone, uses 7732-18-5, Water, uses 84540-57-8, Propylene glycol monomethyl ether acetate
 RL: NUU (Other use, unclassified); USES (Uses)
 (solubility and film-forming properties of calix[4]resorcinarene and its derivs. in relation to development of photoresists)

IT 130508-38-2P 710970-56-2P 830329-30-1P 830329-31-2P
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation)
 ; PREP (Preparation); RACT (Reactant or reagent)
 (synthesis and photoinduced deprotection of calix[4]resorcinarene derivs. with pendant acetal groups for chemical amplified photoresist applications)

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 5 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 2004:419455 HCAPLUS [Full-text](#)
 DOCUMENT NUMBER: 142:143920
 TITLE: A chemically amplified calix[4]arene-based electron-beam resist
 AUTHOR(S): Sailer, H.; Ruderisch, A.; Kern, D. P.; Schurig, V.
 CORPORATE SOURCE: Institute of Applied Physics, University of Tuebingen, Tuebingen, 72076, Germany
 SOURCE: Microelectronic Engineering (2004), 73-74, 228-232

CODEN: MIENEF; ISSN: 0167-9317

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The concept of chemical amplification via cationic polymerization was applied to the novel class of calixarenes as nonpolymeric neg.-tone electron-beam resist materials for the first time. By using a calix[4]arene bearing epoxide residues and a photoacid generating triphenylsulfonium salt (PAG) as nonpolymeric chemical amplified resist system (npCAR) a tremendous increase of resist sensitivity was achieved. The high resolution capability of this npCAR is promising. Etching resistances of the npCAR and the commonly used novolak resins are comparable.

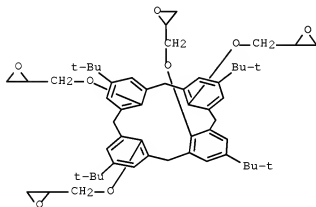
IT 140424-85-7P

RL: PRP (Properties); SPN (Synthetic preparation); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)

(neg. chemical amplified electron-beam resist containing
calix[4]arene bearing epoxide residues and triphenylsulfonium salt)

RN 140424-85-7 HCAPLUS

CN Oxirane, 2,2',2'',2'''-[5,11,17,23-tetrakis(1,1-dimethylethyl)pentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrayl]tetrakis(oxyethylene)]tetrakis- (CA INDEX NAME)

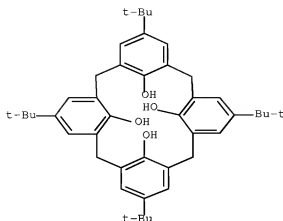


IT 60705-62-6

RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with (±)-epichlorohydrin in presence of Cs2CO3)

RN 60705-62-6 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (CA INDEX NAME)



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST calixarene based neg chem amplified electron beam lithog resist

IT Thickness
(neg. chemical amplified electron-beam resist containing calix[4]arene bearing epoxide residues and triphenylsulfonium salt)

IT Electron beam resists
(neg.-working, chemical amplified; neg. chemical amplified electron-beam resist containing calix[4]arene bearing epoxide residues and triphenylsulfonium salt)

IT 108-10-1, 4-Methylpentan-2-one
RL: NUU (Other use, unclassified); USES (Uses)
(developer; neg. chemical amplified electron-beam resist containing calix[4]arene bearing epoxide residues and triphenylsulfonium salt)

IT 140424-85-7F
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(neg. chemical amplified electron-beam resist containing calix[4]arene bearing epoxide residues and triphenylsulfonium salt)

IT 60705-62-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with (±)-epichlorohydrin in presence of Cs₂CO₃)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 6 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2004:326420 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 140:339079

TITLE: Preparation of chloromethylated calix[4]arene mixtures for negative electron beam resists

INVENTOR(S): Momota, Junji; Oshima, Eiji

PATENT ASSIGNEE(S): Tokuyama Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.

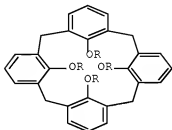
KIND DATE

APPLICATION NO.

DATE

JP 2004123586	A	20040422	JP 2002-288430	20021001 <--
JP 4118645	B2	20080716		
PRIORITY APPLN. INFO.:			JP 2002-288430	20021001 <--
OTHER SOURCE(S):		CASREACT 140:339079; MARPAT 140:339079		

GI



I

AB Calix[4]arenes I [R = (un)substituted C1-10 alkyl] are chloromethylated by HCl and HCHO in reaction systems containing 10-30 weight% H₂O to give mixts. of tetrakis- and tris(chloromethylated) I. I (R = Me) (1.21 g) was treated with a mixture of 1,4-dioxane, AcOH, HCl, H₃PO₄, and 16 weight% H₂O under reflux for 2 h to give 0.85 g 51:41 mixture of 5,11,17,23-tetrakis(chloromethyl)-I (R = Me) and 5,11,17-tris(chloromethyl)-I (R = Me).

IT 139934-98-8P 325814-49-1P 673458-26-9P
680223-95-4P

RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)

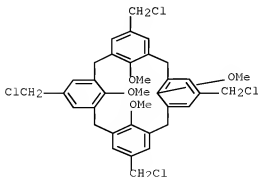
(preparation of chloromethylated calix[4]arene mixts. for neg. electron

beam

resists)

RN 139934-98-8 HCAPLUS

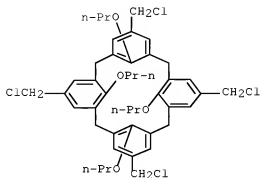
CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
5,11,17,23-tetrakis(chloromethyl)-25,26,27,28-tetramethoxy- (CA INDEX
NAME)



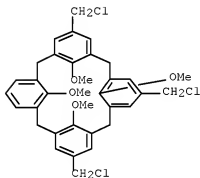
RN 325814-49-1 HCAPLUS

10/594282

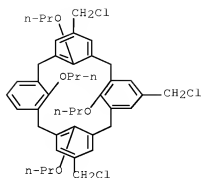
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1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
5,11,17,23-tetrakis(chloromethyl)-25,26,27,28-tetrapropoxy- (CA INDEX
NAME)



RN 673458-26-9 HCAPLUS
CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
5,11,17-tris(chloromethyl)-25,26,27,28-tetramethoxy- (CA INDEX NAME)



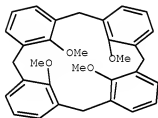
RN 680223-95-4 HCAPLUS
CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
5,11,17-tris(chloromethyl)-25,26,27,28-tetrapropoxy- (CA INDEX NAME)



IT 99095-68-8 147782-22-7,
 25,26,27,28-Tetrapropoxycalix[4]arene
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of chloromethylated calix[4]arene mixts. for neg. electron
 beam
 resists)

RN 99095-68-8 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
 25,26,27,28-tetramethoxy- (CA INDEX NAME)



RN 147782-22-7 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
 25,26,27,28-tetrapropoxy- (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM C07C041-22

ICS C07C043-225

CC 25-29 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)

Section cross-reference(s): 74

ST calixarene chloromethylation water hydrochloric acid formaldehyde; neg

electron beam resist calixarene chloromethylated

IT Electron beam resists

(neg.-working; preparation of chloromethylated calix[4]arene mixts. for

neg.

electron beam resists)

IT Chloromethylation

(preparation of chloromethylated calix[4]arene mixts. for neg. electron

beam

resists)
 IT 7732-18-5, Water, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (concentration control; preparation of chloromethylated calix[4]arene
 mixts. for
 neg. electron beam resists)
 IT 139934-98-8P 325814-49-1P 673458-26-9P
 689223-95-4P
 RL: IMF (Industrial manufacture); SPN (Synthetic
 preparation); PREP (Preparation)
 (preparation of chloromethylated calix[4]arene mixts. for neg. electron
 beam
 resists)
 IT 99095-68-8 147782-22-7,
 25,26,27,28-Tetrapropoxycalix[4]arene
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of chloromethylated calix[4]arene mixts. for neg. electron
 beam
 resists)

L22 ANSWER 7 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2004:140951 HCAPLUS Full-text

DOCUMENT NUMBER: 141:44772

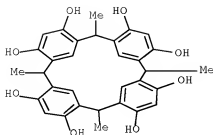
TITLE: A new positive-working alkaline developable
 photoresist based on partially
 O-tert-butoxycarbonylmethylated-tetra-C-
 methylcalix[4]resorcinarene and a photoacid generator
 Iimori, H.; Shibasaki, Y.; Ueda, M.; Ishii, H.
 AUTHOR(S): Department of Organic and Polymeric Materials,
 CORPORATE SOURCE: Graduate School of Science and Engineering, Tokyo
 Institute of Technology, Tokyo, 152-8552, Japan
 SOURCE: Journal of Photopolymer Science and Technology (2003), 16(5), 685-690
 CODEN: JSTEEW; ISSN: 0914-9244

PUBLISHER: Technical Association of Photopolymers, Japan

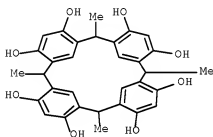
DOCUMENT TYPE: Journal

LANGUAGE: English

AB A new pos.-working low-mol.-weight photoresist has been developed. The
 photoresist consisted of the matrix, tetra-C-methylcalix[4]resorcinarene (p-t-
 BM-C4-R) in which the OH groups were protected with tert-butoxycarbonylmethyl
 groups (protecting ratio: 27-60%), and a photoacid generator (PAG), 5-
 (propylsulfonyloxyimino-5H-thiophen-2-ylidene)-2- methylphenylacetonitrile
 (PTMA). The p-t-BM-C4-R (protecting ratio: 40%) containing PTMA (2 wt%)
 showed a high sensitivity (10 mJ/cm²) and a contrast 11 after the irradiation
 with g-line, post-exposure baking at 120°C at 60 s, and developing with 2.38
 wt% tetramethylammonium hydroxide aqueous solution (TMAHaq) at 20°C for 10 s.
 IT 65338-98-9DP, tert-butoxycarbonylmethylated
 RL: PRP (Properties); SPN (Synthetic preparation); TEM
 (Technical or engineered material use); PREP (Preparation); USES
 (Uses)
 (pos.-working alkaline developable photoresist based on partially
 O-tert-butoxycarbonylmethylatedtetra-C-methylcalix[4]resorcinarene)
 RN 65338-98-9 HCAPLUS
 CN Pentacyclo[19.3.1.13.7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-
 4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl- (CA INDEX NAME)



IT 65338-98-9
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of partially O-tert-butoxycarbonylmethylatedtetra-C-methylcalix[4]resorcinarene)
 RN 65338-98-9 HCAPLUS
 CN Pentacyclo[19.3.1.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl- (CA INDEX NAME)



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 ST pos photoresist butoxycarbonylmethylated methylcalix resorcinarene
 IT Photolithography
 Positive photoresists
 Solubility
 Thermal stability
 (pos.-working alkaline developable photoresist based on partially O-tert-butoxycarbonylmethylatedtetra-C-methylcalix[4]resorcinarene)
 IT 65338-98-9DP, tert-butoxycarbonylmethylated
 RL: PRP (Properties); SPN (Synthetic preparation); TEM
 (Technical or engineered material use); PREP (Preparation); USES
 (Uses)
 (pos.-working alkaline developable photoresist based on partially O-tert-butoxycarbonylmethylatedtetra-C-methylcalix[4]resorcinarene)
 IT 282713-83-1
 RL: TEM (Technical or engineered material use); USES (Uses)
 (pos.-working alkaline developable photoresist based on partially O-tert-butoxycarbonylmethylatedtetra-C-methylcalix[4]resorcinarene)
 IT 5292-43-3, tert-Butyl bromoacetate 65338-98-9
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of partially O-tert-butoxycarbonylmethylatedtetra-C-

methylcalix[4]resorcinarene)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 8 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 2004:57508 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 140:112493

TITLE: Calix resorcinarene derivatives soluble in various solvents and their heat-resistant flat films free from crystallization

INVENTOR(S): Momota, Junji; Onishi, Hironori

PATENT ASSIGNEE(S): Tokuyama Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 30 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

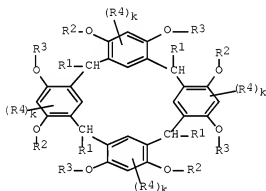
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004018421	A	20040122	JP 2002-173350	20020613 <--
PRIORITY APPLN. INFO.: OTHER SOURCE(S):		MARPAT 140:112493	JP 2002-173350	20020613 <--

GI



I

AB Calix resorcinarene derivs., useful for neg. electron beam resist materials, are represented by general formula I [R1-R3 = H, group shown as (a) C1-20 alkyl, amino, OH, aryl, aryloxy, etc., (b) C6-20 aryl, halo, amino, OH, aryl, aryloxy, etc., (c) C2-20 saturated aliphatic acyl, aromatic acyl, (d) YZ (Y = bond, divalent organic group; Z = ethenyl, halogenoalkyl); R2 ≠ R3 ≠ H; R4 = C1-20 (un)substituted alkyl halo; k = 0, 1, 2]. Thus, 0.6 mol resorcinol was reacted with 0.2 mol paraformaldehyde to yield 5 g of a white solid of an intermediate, then it (3.67 mmol) was esterified with 33 mmol methacryloyl chloride to yield 2.7 g of a white solid of I [R1 = Me, R2 = R3 = C(O)CMe:CH2; k = 0 (II)] showing good solubility in various solvents. Propylene glycol monomethyl ether solution of II gave a flat film free from crystals by spin coating on glass plate followed by drying. A mixture comprising II 50, tetraethylene glycol dimethacrylate 45, α-methylstyrene 5, α-methylstyrene dimer 1, and Perbutyl ND (tert-butylperoxy neodecanoate) was cast-polymerized

while heating up from 30° to 90° to give 2-mm thick test pieces showing high hardness and thermal stability.

IT 646475-35-6P

RL: IMF (Industrial manufacture); PREP (Preparation)
(solvent-soluble polymerizable calix resorcinarene derivs. for neg. EB resist materials and their heat-resistant crystal-free flat films)

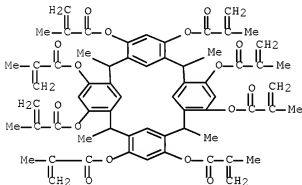
RN 646475-35-6 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2,8,14,20-tetramethylpentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octayl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 646474-80-8

CMF C64 H64 O16

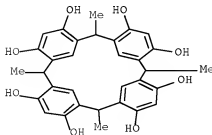


IT 65338-98-9P 646475-05-0P

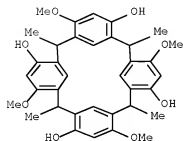
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(solvent-soluble polymerizable calix resorcinarene derivs. for neg. EB resist materials and their heat-resistant crystal-free flat films)

RN 65338-98-9 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl- (CA INDEX NAME)

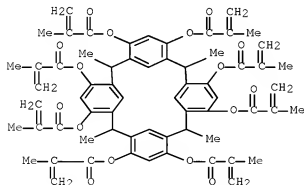


RN 646475-05-0 HCAPLUS
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 tetrol, 6,12,18,24-tetramethoxy-2,8,14,20-tetramethyl- (CA INDEX NAME)



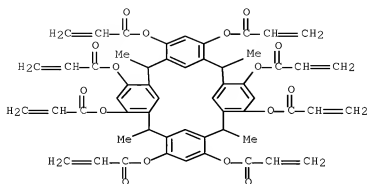
IT 646474-80-8P 646474-81-9P 646474-83-1P
 646474-87-5P 646474-89-7P 646474-91-1P
 646474-94-4P 646474-98-8P 646475-02-7P
 646475-08-3P 646475-11-8P 646475-14-1P
 646475-16-3P 646475-18-5P 646475-20-9P
 646475-22-1P 646475-24-3P 646475-26-5P
 646475-29-8P 646475-31-2P 646475-33-4P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered
 material use); PREP (Preparation); USES (Uses)
 (solvent-soluble polymerizable calix resorcinarene derivs. for neg. EB
 resist materials and their heat-resistant crystal-free flat
 films)

RN 646474-80-8 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, 2,8,14,20-
 tetramethylpentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-
 4,6,10,12,16,18,22,24-octayl ester (9CI) (CA INDEX NAME)



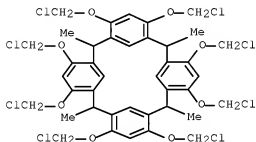
RN 646474-81-9 HCAPLUS
 CN 2-Propenoic acid, 2,8,14,20-
 tetramethylpentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-

4,6,10,12,16,18,22,24-octayl ester (9CI) (CA INDEX NAME)



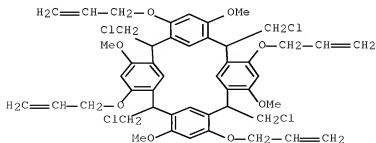
RN 646474-83-1 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
 4,6,10,12,16,18,22,24-octakis(chloromethoxy)-2,8,14,20-tetramethyl- (CA
 INDEX NAME)



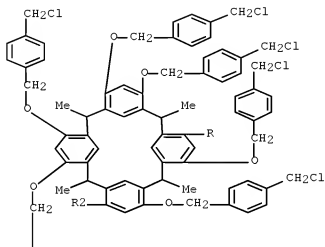
RN 646474-87-5 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
 2,8,14,20-tetrakis(chloromethyl)-4,10,16,22-tetramethoxy-6,12,18,24-
 tetrakis(2-propen-1-yloxy)- (CA INDEX NAME)

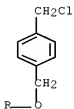


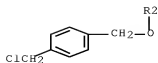
RN 646474-89-7 HCAPLUS
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 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
 4,6,10,12,16,18,22,24-octakis[[4-(chloromethyl)phenyl]methoxy]-2,8,14,20-
 tetramethyl- (CA INDEX NAME)

PAGE 1-A

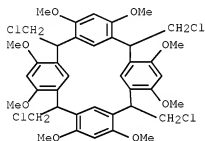


PAGE 2-A

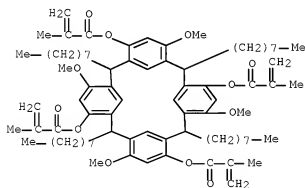




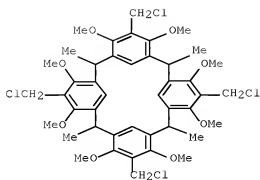
RN 646474-91-1 HCAPLUS
 CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
 2,8,14,20-tetrakis(chloromethyl)-4,6,10,12,16,18,22,24-octamethoxy- (CA
 INDEX NAME)



RN 646474-94-4 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, 6,12,18,24-tetramethoxy-2,8,14,20-
 tetraoctylpentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,10,16,22-
 tetrayl ester (9CI) (CA INDEX NAME)

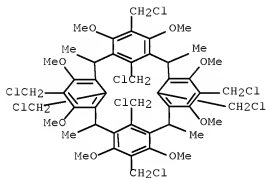


RN 646474-98-8 HCAPLUS
 CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
 5,11,17,23-tetrakis(chloromethyl)-4,6,10,12,16,18,22,24-octamethoxy-
 2,8,14,20-tetramethyl- (CA INDEX NAME)



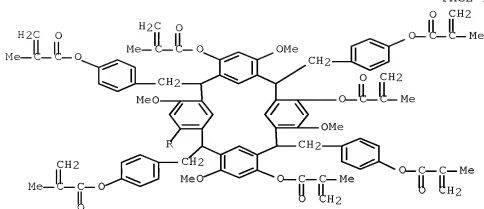
RN 646475-02-7 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene, 5,11,17,23,25,26,27,28-octakis(chloromethyl)-4,6,10,12,16,18,22,24-octamethoxy-2,8,14,20-tetramethyl- (CA INDEX NAME)



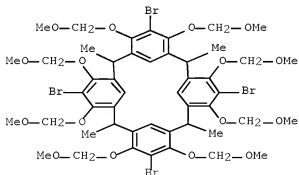
RN 646475-08-3 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, [4,10,16,22-tetramethoxy-6,12,18,24-tetrakis[(2-methyl-1-oxo-2-propenyl)oxy]pentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-2,8,14,20-tetrayl]tetrakis(methylene-4,1-phenylene) ester (9CI) (CA INDEX NAME)



RN 646475-11-8 HCAPLUS

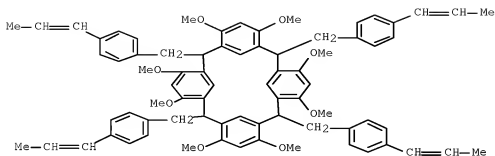
CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
 5,11,17,23-tetrabromo-4,6,10,12,16,18,22,24-octakis(methoxymethoxy)-
 2,8,14,20-tetramethyl- (CA INDEX NAME)



RN 646475-14-1 HCAPLUS

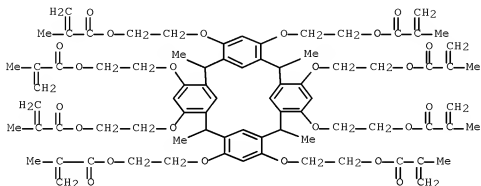
CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
 4,6,10,12,16,18,22,24-octamethoxy-2,8,14,20-tetrakis[4-(1-propen-1-

yl)phenyl)methyl]- (CA INDEX NAME)



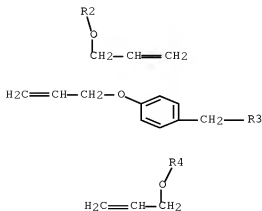
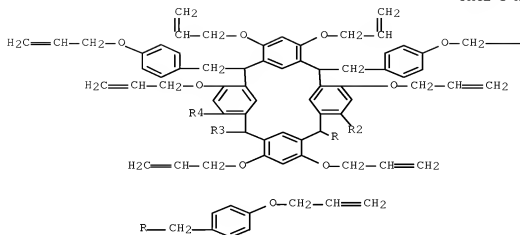
RN 646475-16-3 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, (2,8,14,20-tetramethylpentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octayl)octa-2,1-ethanediyl ester (9CI) (CA INDEX NAME)



RN 646475-18-5 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene, 4,6,10,12,16,18,22,24-octakis(2-propen-1-yloxy)-2,8,14,20-tetrakis[[4-(2-propen-1-yloxy)phenyl)methyl]- (CA INDEX NAME)

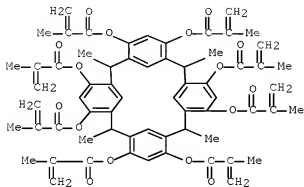


RN 646475-20-9 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, 2,8,14,20-tetramethylpentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octayl ester, polymer with (1-methylethenyl)benzene and oxybis(2,1-ethanedioxy-2,1-ethanedioyl) bis(2-methyl-2-propenoate) (9CI) (CA INDEX NAME)

CM 1

CRN 646474-80-8

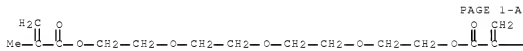
CMF C64 H64 O16



CM 2

CRN 109-17-1

CMF C16 H26 O7



PAGE 1-B

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CM 3

CRN 98-83-9

CMF C9 H10

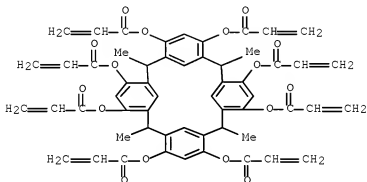


RN 646475-22-1 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, oxybis(2,1-ethanediyl)oxy-2,1-ethanediyl ester, polymer with (1-methylethenyl)benzene and 2,8,14,20-tetramethylpentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octayl octa-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 646474-81-9

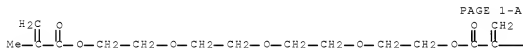
CMF C56 H48 O16



CM 2

CRN 109-17-1

CMF C16 H26 O7



PAGE 1-B

—Me

CM 3

CRN 98-83-9

CMF C9 H10



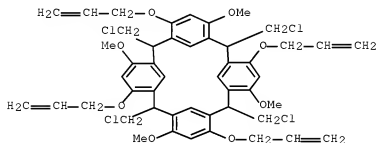
RN 646475-24-3 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, oxybis(2,1-ethanediyl)oxy-2,1-ethanediyl ester, polymer with (1-methylethenyl)benzene and 2,8,14,20-tetrakis(chloromethyl)-4,10,16,22-tetramethoxy-6,12,18,24-tetrakis(2-propenyloxy)pentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene (9CI) (CA INDEX NAME)

CM 1

CRN 646474-87-5

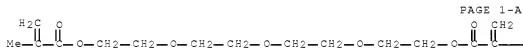
CMF C48 H52 C14 O8



CM 2

CRN 109-17-1

CMF C16 H26 O7



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PAGE 1-B

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CM 3

CRN 98-83-9

CMF C9 H10



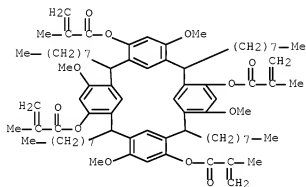
RN 646475-26-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 6,12,18,24-tetramethoxy-2,8,14,20-tetraoctylpentacyclo[19.3.1.13,7.19,13.115,19]octacosal(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,10,16,22-tetrayl ester, polymer with (1-methylethenyl)benzene and oxybis(2,1-ethanediyl-2,1-ethanediyl) bis(2-methyl-2-propenoate) (9CI)
(CA INDEX NAME)

CM 1

CRN 646474-94-4

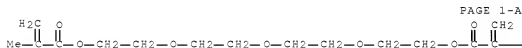
CMF C80 H112 O12



CM 2

CRN 109-17-1

CMF C16 H26 O7



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CM 3

CRN 98-83-9

CMF C9 H10

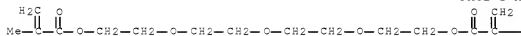




CM 2

CRN 109-17-1

CMF C16 H26 O7



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CM 3

CRN 98-83-9

CMF C9 H10



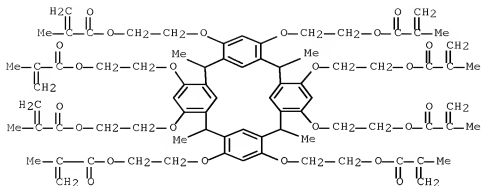
RN 646475-31-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, (2,8,14,20-tetramethylpentacyclo[19.3.1.13,7.19,13.115,19]octacosal(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octayl)octakis(oxy-2,1-ethanediyl) ester, polymer with (1-methylethenyl)benzene and oxybis(2,1-ethanediyl)oxy-2,1-ethanediyl) bis(2-methyl-2-propenoate) (9CI) (CA INDEX NAME)

CM 1

CRN 646475-16-3

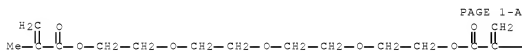
CMF C80 H96 O24



CM 2

CRN 109-17-1

CMF C16 H26 O7



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CM 3

CRN 98-83-9

CMF C9 H10



RN 646475-33-4 HCAPLUS

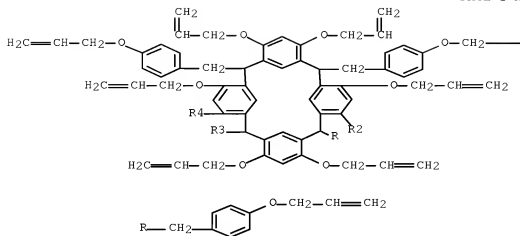
CN 2-Propenoic acid, 2-methyl-, oxybis(2,1-ethanedioxy-2,1-ethanediyl) ester, polymer with (1-methylethenyl)benzene and 4,6,10,12,16,18,22,24-octakis(2-propenyloxy)-2,8,14,20-tetrakis[[4-(2-propenyloxy)phenyl]methyl]pentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene (9CI) (CA INDEX NAME)

CM 1

CRN 646475-18-5

CMF C92 H96 O12

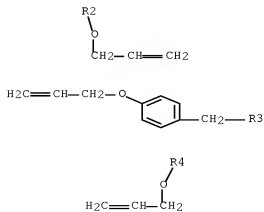
PAGE 1-A



PAGE 1-B



PAGE 2-A

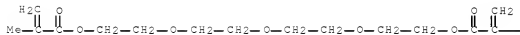


CM 2

CRN 109-17-1

CMF C16 H26 O7

PAGE 1-A



PAGE 1-B

—Me

CM 3

CRN 98-83-9

CMF C9 H10



- IC ICM C07C069-54
ICS C07C043-215; C07C043-225; C07C043-307; C08F016-32; C08F020-20;
C08J005-18; C08L029-10; C08L033-04
- CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 37, 74
- ST polymerizable group contg calix resorcinarene film; heat resistance calix
resorcinarene film; neg electron beam resist calix resorcinarene
- IT Metacyclophanes
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(calixarenes; solvent-soluble polymerizable calix resorcinarene derivs.
for neg. EB resist materials and their heat-resistant
crystal-free flat films)
- IT Electron beam resists
(neg.-working; solvent-soluble polymerizable calix resorcinarene derivs.
for neg. EB resist materials and their heat-resistant
crystal-free flat films)
- IT Plastic films
(solvent-soluble polymerizable calix resorcinarene derivs. for neg. EB
resist materials and their heat-resistant crystal-free flat
films)
- IT 646475-35-6P
RL: IMF (Industrial manufacture); PREP (Preparation)
(solvent-soluble polymerizable calix resorcinarene derivs. for neg. EB

resist materials and their heat-resistant crystal-free flat films)

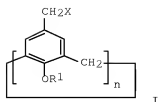
IT 65338-98-9P 646475-05-0P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (solvent-soluble polymerizable calix resorcinarene derivs. for neg. EB resist materials and their heat-resistant crystal-free flat films)

IT 646474-80-8P 646474-81-9P 646474-83-1P
 646474-87-5P 646474-89-7P 646474-91-1P
 646474-94-4P 646474-98-8P 646475-02-7P
 646475-08-3P 646475-11-8P 646475-14-1P
 646475-16-3P 646475-18-5P 646475-20-9P
 646475-22-1P 646475-24-3P 646475-26-5P
 646475-29-3P 646475-31-2P 646475-33-4P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (solvent-soluble polymerizable calix resorcinarene derivs. for neg. EB resist materials and their heat-resistant crystal-free flat films)

IT 50-00-0, Formaldehyde, reactions 107-20-0 108-46-3, Resorcinol, reactions 124-19-6, Nonanal 150-19-6 6751-75-3 7339-87-9
 646474-96-6 646475-00-5 646475-12-9
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (solvent-soluble polymerizable calix resorcinarene derivs. for neg. EB resist materials and their heat-resistant crystal-free flat films)

L22 ANSWER 9 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 2003:527539 HCAPLUS Full-text
 DOCUMENT NUMBER: 139:85127
 TITLE: Preparation of solvent-soluble calixarenes and their smooth films
 INVENTOR(S): Oshima, Eiji; Takenaka, Junji
 PATENT ASSIGNEE(S): Tokuyama Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2003192649	A	20030709	JP 2001-397522	20011227 <--
PRIORITY APPLN. INFO.:			JP 2001-397522	20011227 <--
OTHER SOURCE(S):	MARPAT	139:85127		
GI				



AB Title compds. I [n = 4-10; R1 = (cyclo)alkyl, alkenyl, (meth)acryloyl, etc.; X = NR2R3; R2, R3 = H, (un)substituted alkyl, alkenyl, aryl; R2 = R3 ≠ H; R2R3 may be linked to form ring], useful for electron beam resists (no data), are prepared by amination of I (n, R1 = same as above; X = Cl). Thus, I (n = 6, R1 = Me, X = Cl) was aminated by Et2NH at 50° for 3 h in CHCl3 to give 74% I (n, R1 = same as above; X = NEt2), which showed high solubility in various organic solvents and no crystallization when formed into a film.

IT 139934-98-8

RL: RCT (Reactant); RACT (Reactant or reagent)

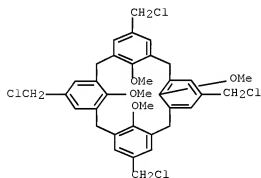
(preparation of solvent-soluble calixarenes and their crystal-free films

for

electron beam resists)

RN 139934-98-8 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacosane-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene, 5,11,17,23-tetrakis(chloromethyl)-25,26,27,28-tetramethoxy- (CA INDEX NAME)



IT 556066-31-0P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

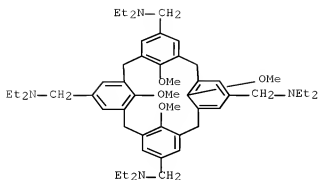
(preparation of solvent-soluble calixarenes and their crystal-free films

for

electron beam resists)

RN 556066-31-0 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacosane-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-tetramethanamine, N5,N5,N11,N11,N17,N17,N23,N23-octaethyl-25,26,27,28-tetramethoxy- (CA INDEX NAME)



IC ICM C07C217-58
ICS C07C213-02; C07C219-28; C07D295-08; G03F007-038

CC 25-29 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
Section cross-reference(s): 74

ST calixarene prepn film electron beam resist; amination
chloromethylcalixarene electron beam resist film

IT Metacyclophanes
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(calixarenes; preparation of solvent-soluble calixarenes and their crystal-free films for electron beam resists)

IT Electron beam resists
(neg.-working; preparation of solvent-soluble calixarenes and their crystal-free films for electron beam resists)

IT Films
(preparation of solvent-soluble calixarenes and their crystal-free films for electron beam resists)

IT Amines, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of solvent-soluble calixarenes and their crystal-free films for electron beam resists)

IT 109-73-9, Butylamine, reactions 109-83-1, (2-Hydroxyethyl)methylamine
109-89-7, Diethylamine, reactions 110-89-4, Piperidine, reactions
111-42-2, Diethanolamine, reactions 122-39-4, Diphenylamine, reactions
124-02-7, Diallylamine 142-84-7, Dipropylamine 39216-86-9
124006-38-8 124006-39-9 139934-98-8 476687-13-5
556066-51-4 556066-52-5 556066-53-6 556066-54-7 556066-55-8
556066-56-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of solvent-soluble calixarenes and their crystal-free films for electron beam resists)

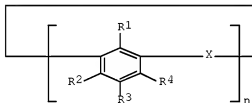
IT 556066-45-6P 556066-46-7P 556066-47-8P
RL: RCT (Reactant); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(preparation of solvent-soluble calixarenes and their crystal-free films for electron beam resists)

electron beam resists)
 IT 556066-30-9P 556066-31-0P 556066-32-1P 556066-33-2P
 556066-34-3P 556066-35-4P 556066-36-5P 556066-37-6P 556066-38-7P
 556066-39-8P 556066-40-1P 556066-41-2P 556066-42-3P 556066-43-4P
 556066-44-5P 556066-48-9P 556066-49-0P 556066-50-3P
 RL: SPN (Synthetic preparation); TEM (Technical or engineered
 material use); PREP (Preparation); USES (Uses)
 (preparation of solvent-soluble calixarenes and their crystal-free films
 for
 electron beam resists)

L22 ANSWER 10 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 2002:867239 HCAPLUS [Full-text](#)
 DOCUMENT NUMBER: 137:377437
 TITLE: Positive working radiation polymerizable compositions
 INVENTOR(S): Ueda, Mitsuru; Shibasaki, Yuji; Fujigaya, Takehiko;
 Kwon, Yong Gil
 PATENT ASSIGNEE(S): Jsr Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

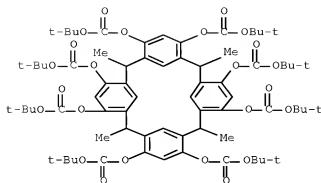
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002328473	A	20021115	JP 2001-134962	20010502 <--
PRIORITY APPLN. INFO.:			JP 2001-134962	20010502 <--
OTHER SOURCE(S):	MARPAT 137:377437			

GI



I

- AB The compns. comprise (A) cyclic polyphenolic compds. I (R1-4 = H, OH, halo, alkyl, aryl, aralkyl, alkoxy, alkenyl, acyl, alkoxycarbonyl, alkyloxyloxy, aryloxyloxy, cyano, nitro; ≥1 of R1-4 is tert-butoxycarbonyloxy; X = direct bond, CR5R6; R5-6 = H, alkyl, aryl; n = integer of 3-8) and (B) radiation-sensitive acid generators. The compns. have high resolution and high sensitivity.
- IT 65338-98-9DP, tert-butoxycarbonyl derivs. 65338-98-9P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP
 (Preparation); RACT (Reactant or reagent)
 (calixarene-acid generator compns. for pos.-working



- IC ICM G03F007-039
ICS G03F007-004; H01L021-027
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
- ST methylcalixresorcinarene acid generator pos photoresist;
calixarene acid generator compn pos photoresist
- IT Positive photoresists
(calixarene-acid generator compns. for pos.-working photoresists)
- IT 65338-98-9DP, tert-butoxycarbonyl derivs. 65338-98-9P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(calixarene-acid generator compns. for pos.-working photoresists)
- IT 250715-31-2P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(calixarene-acid generator compns. for pos.-working photoresists)
- IT 75-07-0, Acetaldehyde, reactions 108-46-3, Resorcinol, reactions 24424-99-5, Di-tert-butyl dicarbonate
RL: RCT (Reactant); RACT (Reactant or reagent)
(calixarene-acid generator compns. for pos.-working photoresists)
- IT 137308-86-2, Diphenyliodonium 9,10-dimethoxyanthracene-2-sulfonate
RL: TEM (Technical or engineered material use); USES (Uses)
(radiation-sensitive acid generator; calixarene-acid generator compns. for pos.-working photoresists)

L22 ANSWER 11 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN
ACCESSION NUMBER: 1999:513131 HCAPLUS [Full-text](#)
DOCUMENT NUMBER: 131:293195
TITLE: Novel dissolution inhibitors based on calixarene derivatives for use in chemical amplification resists
AUTHOR(S): Ito, Hiroshi; Nakayama, Tomonari; Ueda, Mitsuru; Sherwood, Mark; Miller, Dolores
CORPORATE SOURCE: IBM Almaden Research Center, San Jose, CA, 95120, USA
SOURCE: Polymeric Materials Science and Engineering (1999), 81, 51-52
CODEN: PMSEDG; ISSN: 0743-0515
PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal
 LANGUAGE: English

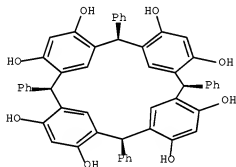
AB Calix[4]resorcinarenes were synthesized by condensing resorcinol with aldehydes (acetaldehyde, benzaldehyde, and 4-isopropylbenzaldehyde) and separated into C_{4v} and C_{2v}, isomers. All eight OH groups were protected with acid-labile groups such as tBOC and tBuOCOCH₂. The protected calixarenes have been found to be excellent dissoln. inhibitors for use in chemical amplification resists.

IT 74410-61-0DP, t-butoxycarbonyl- or t-butoxycabonylmethyl-protected 145843-14-7DP, t-butoxycarbonyl- or t-butoxycabonylmethyl-protected 246023-01-8P 246023-03-0P 246023-04-1DP, t-butoxycarbonyl- or t-butoxycabonylmethyl-protected 246023-06-3P 246024-56-5DP, t-butoxycarbonyl- or t-butoxycabonylmethyl-protected
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (novel dissoln. inhibitors based on calix[4]resorcinarenes for use in chemical amplification resists)

RN 74410-61-0 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetraphenyl-, stereoisomer (CA INDEX NAME)

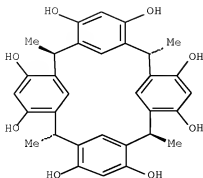
Relative stereochemistry.



RN 145843-14-7 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl-, (2 β ,8 α ,14 β ,20 α)- (CA INDEX NAME)

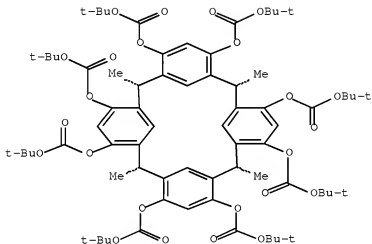
Relative stereochemistry.



RN 246023-01-8 HCAPLUS

[illegible]

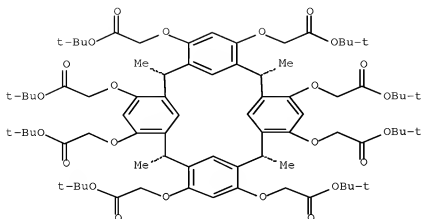
Relative stereochemistry.



RN 246023-03-0 HCAPLUS

```
CN      Acetic acid, 2,2',2'',2''',2'''',2'''''',2''''''',2''''''''-[ (2,8,14,20-  
tetramethylpentacyclo[19.3.1.13.7.19.3.115,19]octacos-  
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-  
4,6,10,12,16,18,22,24-octayl)octakis(oxy)octakis-,  
1,1',1'',1'''',1''''',1''''''',1''''''''-octakis(1,1-dimethylethyl)  
ester, stereoisomer (CA INDEX NAME)
```

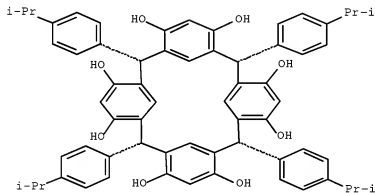
Relative stereochemistry.



RN 246023-04-1 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacosal-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-
4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetrakis[4-(1-methylethyl)phenyl]-,
steroid (CA INDEX NAME)

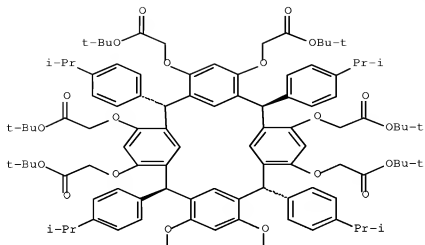
Relative stereochemistry.



RN 246023-06-3 HCAPLUS

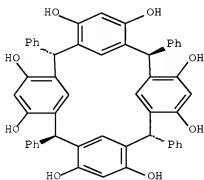
CN Acetic acid, 2,2',2'',2''',2''''',2''''',2''''',2''''''-[[2,8,14,20-tetrakis[4-(1-methylethyl)phenyl]pentacyclo[19.3.1.13,7.19,13.15,19]octacos-1(25),3(5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octayl]octakis(oxy)]octakis-, octakis(1,1-dimethylethyl) ester, stereoisomer (9CI) (CA INDEX NAME)

Relative stereochemistry.



RN 246024-56-6 HCAPLUS
 CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-
 4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetraphenyl-,
 (2 β ,8 α ,14 β ,20 α)- (CA INDEX NAME)

Relative stereochemistry.



IT 74410-61-0P 74708-10-4P 145843-14-7DP,
 t-butoxycarbonyl- or t-butoxycarbonylmethyl-protected 246023-04-1F

246023-05-2P 246024-56-6P

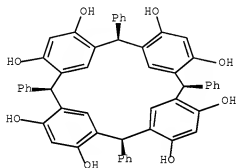
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation of novel dissoln. inhibitors based on calix[4]resorcinarenes for use in chemical amplification resists)

RN 74410-61-0 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetraphenyl-, stereoisomer (CA INDEX NAME)

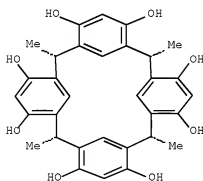
Relative stereochemistry.



RN 74708-10-4 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl-, stereoisomer (CA INDEX NAME)

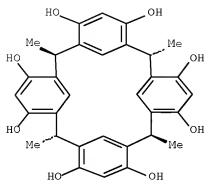
Relative stereochemistry.



RN 145843-14-7 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl-, (2 β ,8 α ,14 β ,20 α)- (CA INDEX NAME)

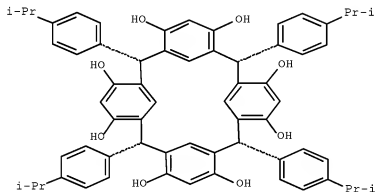
Relative stereochemistry.



RN 246023-04-1 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-
 4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetrakis[4-(1-methylethyl)phenyl]-,
 stereoisomer (CA INDEX NAME)

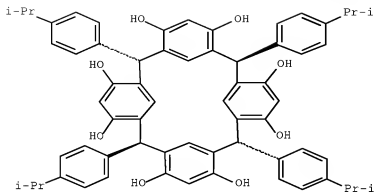
Relative stereochemistry.



RN 246023-05-2 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-
 4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetrakis[4-(1-methylethyl)phenyl]-,
 (2 α ,8 β ,14 α ,20 β)- (CA INDEX NAME)

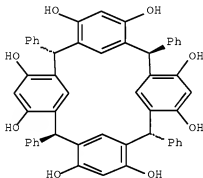
Relative stereochemistry.



RN 246024-56-6 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-
4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetraphenyl-,
(2 β ,8 α ,14 β ,20 α)- (CA INDEX NAME)

Relative stereochemistry.



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 38, 76

ST dissoln inhibitor calixarene chem amplification photoresist

IT Photolithography
Photoresists

Semiconductor device fabrication

(novel dissoln. inhibitors based on calix[4]resorcinarenes for use in chemical amplification resists)

IT Dendritic polymers

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(novel dissoln. inhibitors based on calix[4]resorcinarenes for use in chemical amplification resists)

IT 159296-87-4, 4-Hydroxystyrene-tert-butyl acrylate copolymer

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(novel dissoln. inhibitors based on calix[4]resorcinarenes for use in

- chemical amplification resists)
- IT 74410-61-0DP, t-butoxycarbonyl- or t-butoxycabonylmethyl-protected 145843-14-7DP, t-butoxycarbonyl- or t-butoxycabonylmethyl-protected 246023-01-8P 246023-03-0P 246023-04-1DP, t-butoxycarbonyl- or t-butoxycabonylmethyl-protected 246023-06-3P 246024-56-6DP, t-butoxycarbonyl- or t-butoxycabonylmethyl-protected
- RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
- (novel dissoln. inhibitors based on calix[4]resorcinarenes for use in chemical amplification resists)
- IT 75-07-0, Acetaldehyde, reactions 100-52-7, Benzaldehyde, reactions 108-46-3, Resorcinol, reactions 122-03-2, 4-Isopropylbenzaldehyde 5292-43-3, tert-Butyl bromoacetate 24424-99-5, Di-tert-butyl dicarbonate
- RL: RCT (Reactant); RACT (Reactant or reagent)
- (preparation of novel dissoln. inhibitors based on calix[4]resorcinarenes for use in chemical amplification resists)
- IT 74410-61-0P 74708-10-4P 145843-14-7DP, t-butoxycarbonyl- or t-butoxycabonylmethyl-protected 246023-04-1P 246023-05-2P 246024-56-6P
- RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
- (preparation of novel dissoln. inhibitors based on calix[4]resorcinarenes for use in chemical amplification resists)
- REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 12 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1999:44198 HCAPLUS Full-text

DOCUMENT NUMBER: 130:202814

TITLE: A New Photoresist Based on Calix[4]resorcinarene Dendrimer

AUTHOR(S): Haba, Osamu; Haga, Kohji; Ueda, Mitsuru; Morikawa, Osamu; Konishi, Hisatoshi

CORPORATE SOURCE: Department of Human Sensing and Functional Sensor Engineering Graduate School of Engineering, Yamagata University, Yamagata, 992-8510, Japan

SOURCE: Chemistry of Materials (1999), 11(2), 427-432

CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A new dendrimer (1), which contains phenol groups in the exterior for solubilization in aqueous alkaline solution and calix[4]resorcinarene in the interior to increase the mol. weight and number of the phenol group even in the lower generation, was designed as new neg.-working, alkaline-developable photoresist material. A neg.-working photoresist based on 1, 2,6-bis(hydroxymethyl)phenol as crosslinker, and diphenyliodonium 9,10-dimethoxyanthracene-2-sulfonate as a photoacid generator was developed. This resist gave a clear neg. pattern through postbaking at 110° after exposure to UV light, followed by developing with a 0.3% aqueous Me4NOH solution at room temperature

IT 196298-31-4P

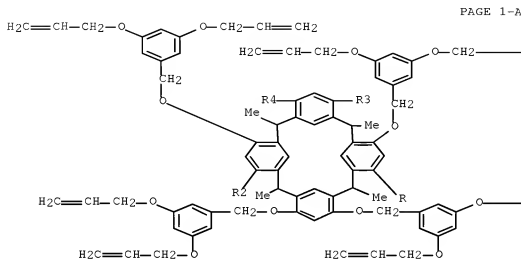
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(in synthesis of calix[4]resorcinarene dendrimer)

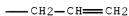
RN 196298-31-4 HCAPLUS

10/594282

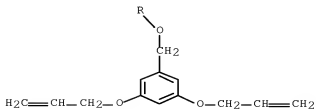
CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
4,6,10,12,16,18,22,24-octakis[[3,5-bis(2-propen-1-yloxy)phenyl]methoxy]-
2,8,14,20-tetramethyl- (CA INDEX NAME)



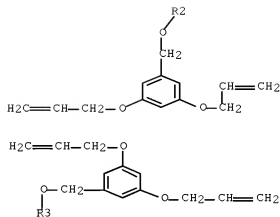
PAGE 1-B



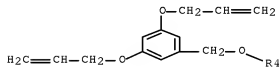
PAGE 2-A



PAGE 3-A



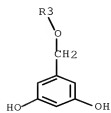
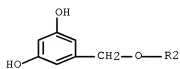
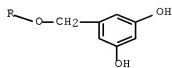
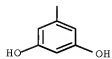
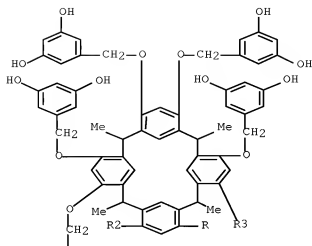
PAGE 4-A



IT 196298-30-3P
 RL: PRP (Properties); SPN (Synthetic preparation); TEM
 (Technical or engineered material use); PREP (Preparation); USES
 (Uses)
 (lithog. characterization of new photoresist based on
 calix[4]resorcinarene dendrimer)

RN 196298-30-3 HCAPLUS

CN 1,3-Benzenediol, 5,5',5'',5''',5''''',5''''',5''''',5''''''-(2,8,14,20-
 tetramethylpentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-
 4,6,10,12,16,18,22,24-octayl)octakis(oxyethylene)octakis- (9CI) (CA
 INDEX NAME)



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST lithog photoresist calixresorcinarene dendrimer

IT Negative photoresists
(lithog. characterization of new photoresist based on calix[4]resorcinarene dendrimer)

IT Dendritic polymers
RL: TEM (Technical or engineered material use); USES (Uses)
(lithog. characterization of new photoresist based on calix[4]resorcinarene dendrimer)

IT 2937-59-9, 2,6-Bis(hydroxymethyl)phenol
RL: TEM (Technical or engineered material use); USES (Uses)
(crosslinker; lithog. characterization of new photoresist based on calix[4]resorcinarene dendrimer)

IT 75-59-2, Tetramethylammonium hydroxide
RL: NUU (Other use, unclassified); USES (Uses)
(developer; lithog. characterization of new photoresist based on calix[4]resorcinarene dendrimer)

IT 135710-38-2P, Methyl 3,5-di(allyloxy)benzoate 177837-80-8P, 3,5-Di(allyloxy)benzyl alcohol 196298-31-4P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(in synthesis of calix[4]resorcinarene dendrimer)

IT 196298-30-3P
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(lithog. characterization of new photoresist based on calix[4]resorcinarene dendrimer)

IT 137308-86-2, Diphenyliodonium 9,10-dimethoxyanthracene-2-sulfonate
RL: TEM (Technical or engineered material use); USES (Uses)
(photoacid generator; lithog. characterization of new photoresist based on calix[4]resorcinarene dendrimer)

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 13 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1998:781642 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 130:146122

TITLE: A New Three-Component Photoresist Based on Calix[4]resorcinarene Derivative, a Crosslinker, and a Photoacid Generator

AUTHOR(S): Nakayama, Tomonari; Nomura, Masayoshi; Haga, Kohji; Ueda, Mitsuru

CORPORATE SOURCE: Dep. Human Sensing and Functional Sensor Eng., Graduate School of Eng., Yamagata University, Yonezawa, Yamagata, 992-8510, Japan

SOURCE: Bulletin of the Chemical Society of Japan (1998), 71(12), 2979-2984

CODEN: BCSJA8; ISSN: 0009-2673

PUBLISHER: Chemical Society of Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Calix[4]resorcinarene [2,8,14,20-tetramethylcalix[4]arene-4,6,10,12,16,18,22,24-octol; C4-RA](4) having p-hydroxybenzyl groups on its exterior was prepared by the condensation of C4-RA and p-(allyloxy)benzyl bromide, followed by the cleavage of allyl groups with palladium catalyst and ammonium formate. Compound 4 having high transparency to UV-light above 300

nm was considered for a new resist matrix. A three-component photoresist consisting of 4, 2,6-bis(hydroxymethyl)-4-methylphenol (BHMP), and diphenyliodonium 9,10-dimethoxyanthracene-2-sulfonate (DIAS) showed a sensitivity of 19 mJ cm⁻²(D1/2) and a contrast of 3.0 (γ1/2) when it was exposed to 365 nm light and post-exposure baked (PEB) at 110 °C for 5 min, followed by developing with a 0.2 wt% aqueous tetramethylammonium hydroxide (TMAH) solution. A fine neg. image featuring 1 μm of min. line and space patterns was observed on film of the photoresist exposed to 40 mJ-cm⁻² of UV-light at 365 nm with a scanning electron microscope.

IT 220033-50-1P

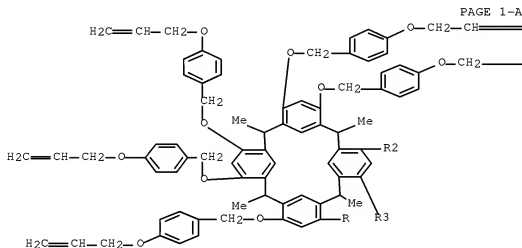
RL: RCT (Reactant); SPN (Synthetic preparation); PREP

{Preparation}; RACT (Reactant or reagent)

(in synthesis of calix[4]resorcinarene derivative for photoresist formulation)

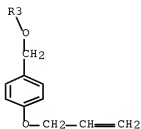
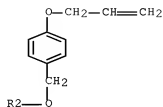
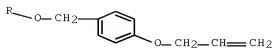
RN 220033-50-1 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacosan-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene, 2,8,14,20-tetramethyl-4,6,10,12,16,18,22,24-octakis[4-(2-propen-1-yloxy)phenyl]methoxy]- (CA INDEX NAME)



==CH2

—CH=CH2



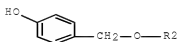
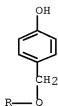
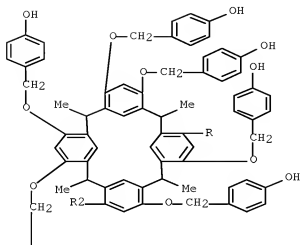
IT 220033-49-8P

RL: PRP (Properties); SPN (Synthetic preparation); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)

(lithog. characteristics of three-component photoresist
consisting of calix[4]resorcinarene derivative matrix and crosslinker and
photoacid generator)

RN 220033-49-8 HCAPLUS

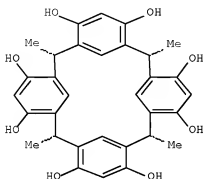
CN Phenol, 4, 4', 4'', 4''', 4''''', 4''''''', 4''''''''', 4''''''''''-[(2, 8, 14, 20-
tetramethylpentacyclo[19.3.1.13, 7.19, 13.115, 19]octacos-
1(25), 3, 5, 7(28), 9, 11, 13(27), 15, 17, 19(26), 21, 23-dodecaene-
4, 6, 10, 12, 16, 18, 22, 24-octayl)octakis(oxymethylene)octakis- (9CI) (CA
INDEX NAME)



IT 74708-10-4
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with allyloxybenzyl bromide and 18-crown-6 in synthesis of
 calix[4]resorcinarene derivative for photoresist formulation)
 RN 74708-10-4 HCAPLUS
 CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-

4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl-, stereoisomer (CA INDEX NAME)

Relative stereochemistry.



- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
- ST photoresist calixresorcinarene deriv crosslinker photoacid generator; lithog photoresist calixresorcinarene deriv
- IT UV and visible spectra
(absorption; of calix[4]resorcinarene derivative for photoresist formulation)
- IT Photoresists
(lithog. characteristics of three-component photoresist consisting of calix[4]resorcinarene derivative matrix and crosslinker and photoacid generator)
- IT Thermal properties
(of calix[4]resorcinarene derivative for photoresist formulation)
- IT 75-59-2, Tetramethylammonium hydroxide
RL: NUU (Other use, unclassified); USES (Uses)
(developer; lithog. characteristics of three-component photoresist consisting of calix[4]resorcinarene derivative matrix and crosslinker and photoacid generator)
- IT 17455-13-9, 18-Crown-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(in synthesis of calix[4]resorcinarene derivative for photoresist formulation)
- IT 3256-45-9P, p-(Allyloxy)benzyl alcohol 143116-30-7P, p-(Allyloxy)benzyl bromide 220033-50-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(in synthesis of calix[4]resorcinarene derivative for photoresist formulation)
- IT 220033-49-3P
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(lithog. characteristics of three-component photoresist consisting of calix[4]resorcinarene derivative matrix and crosslinker and photoacid generator)
- IT 91-04-3, 2,6-Bis(hydroxymethyl)-4-methylphenol 137308-86-2, Diphenyliodonium 9,10-dimethoxyanthracene-2-sulfonate
RL: PRP (Properties); TEM (Technical or engineered material use); USES

(Uses)

(lithog. characteristics of three-component photoresist consisting of calix[4]resorcinarene derivative matrix and crosslinker and photoacid generator)

IT 74768-10-4

RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction with allyloxybenzyl bromide and 18-crown-6 in synthesis of calix[4]resorcinarene derivative for photoresist formulation)

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 14 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1998:758628 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 130:73852

TITLE: Phenolic dendrimer and radiation-sensitive composition containing it for resist

INVENTOR(S): Ueda, Mitsuru

PATENT ASSIGNEE(S): JSR Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 25 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

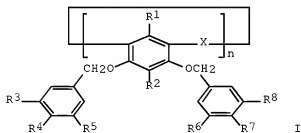
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	-----
JP 10310545	A	19981124	JP 1997-136066	19970509 <--
PRIORITY APPLN. INFO.:			JP 1997-136066	19970509 <--
OTHER SOURCE(S):	MARPAT 130:73852			

GI



AB Title composition contains phenolic dendrimer I (R1-R8 = H, OH, halo, alkyl, aryl, aralkyl, alkoxy, alkenyl, alkenyloxy, acyl, alkoxy carbonyl, alkyloxyloxy, aryloxyloxy, cyano, NO₂; ≥1 of R3-R8 = OH; X = single bond, CR₉R₁₀; R₉, R₁₀ = H, alkyl, aryl; n = 3-8). The composition is useful as resist showing high sensitivity and resolution

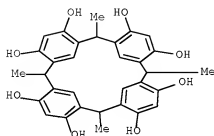
IT 65336-98-9P 196298-31-4P

RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(in preparation of phenolic dendrimer for radiation-sensitive resist composition)

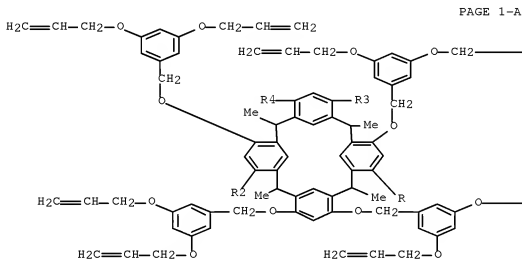
RN 65338-98-9 HCAPLUS

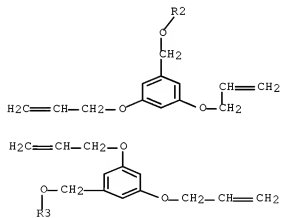
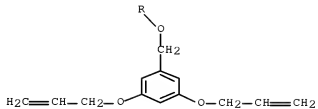
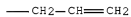
CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-
 4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl- (CA INDEX NAME)

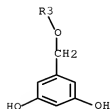
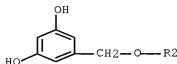
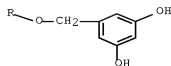
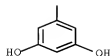


RN 196298-31-4 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
 4,6,10,12,16,18,22,24-octakis[3,5-bis(2-propen-1-yloxy)phenylmethoxy]-
 2,8,14,20-tetramethyl- (CA INDEX NAME)







- IC ICM C07C043-23
ICS G03F007-022; G03F007-038; H01L021-027
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 25
- ST phenolic dendrimer radiation sensitive resist
- IT Photoresists
(radiation-sensitive resist composition containing phenolic dendrimer)
- IT Resists
(radiation-sensitive; radiation-sensitive resist composition containing phenolic dendrimer)
- IT 13965-03-2P, Bis(triphenylphosphine)palladium(II) dichloride
RL: CAT (Catalyst use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(in preparation of phenolic dendrimer for radiation-sensitive resist composition)
- IT 2150-44-9P, Methyl 3,5-dihydroxybenzoate 65338-98-9P
135710-38-2P, Methyl 3,5-bis(allyloxy)benzoate 177837-80-8P
182058-69-1P 196298-31-4P
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(in preparation of phenolic dendrimer for radiation-sensitive resist composition)

IT 75-07-0, Acetaldehyde, reactions 106-95-6, 3-Bromopropene, reactions
 108-46-3, Resorcinol, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (in preparation of phenolic dendrimer for radiation-sensitive resist
 composition)
 IT 196298-30-3P
 RL: FNU (Preparation, unclassified); TEM (Technical or
 engineered material use); PREP (Preparation); USES (Uses)
 (radiation-sensitive resist composition containing phenolic dendrimer)

L22 ANSWER 15 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1998:592926 HCAPLUS Full-text

DOCUMENT NUMBER: 129:283338

ORIGINAL REFERENCE NO.: 129:57637a,57640a

TITLE: Calixarene and dendrimer as novel photoresist
 materials

AUTHOR(S): Haba, Osamu; Takahashi, Daisuke; Haga, Kohji; Sakai,
 Yoshimasa; Nakayama, Tomonari; Ueda, Mitsuru

CORPORATE SOURCE: Department of Human Sensing and Functional Sensor
 Engineering, Graduate School of Engineering, Yamagata
 University, Yamagata, 992, Japan

SOURCE: ACS Symposium Series (1998), 706(Micro- and
 Nanopatterning Polymers), 237-248

CODEN: ACSMC8; ISSN: 0097-6156

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Neg.-working alkaline developable photoresists based on calix[4]-resorcinarene
 (1) or calixarene dendrimer (2), a crosslinker, and a photoacid generator have
 been developed. Compound 2 was prepared by the condensation of compound 1
 with 3,5-diallyloxybenzylbromide, followed by the removal of allyl groups.
 The resist consisting of 1 (70 wt%), a photoacid generator, diphenyliodonium
 9,10-dimethoxyanthracene-2-sulfonate (DIAS) (10 wt%), and 4,4-
 methylenebis[2,6-bis(hydroxymethyl)-phenol] (MBHP) (20 wt%) as a crosslinker
 showed a sensitivity of 2.2 mJ-cm⁻² and a contrast of 3.1 when it was exposed
 to 365 nm light and postbaked at 130°C for 3 min, followed by developing with
 a 0.1% aqueous tetramethylammonium hydroxide (TMAH) solution. On the other
 hand, the resist formulated by mixing 2 (70 wt%), DIAS (10 wt%), and the
 crosslinker, 2,6-bis(hydroxymethyl)phenol (BHP) produced a clear neg. pattern
 by the exposure of 365 nm (10 mJ-cm⁻²) UV light, postbaked at 110°C for 3 min,
 and developed with a 0.3% TMAH aqueous solution

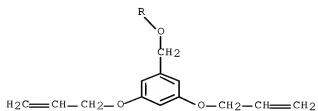
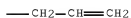
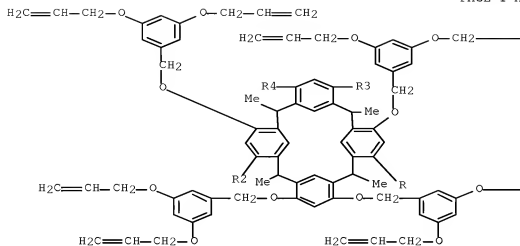
IT 196298-31-4P

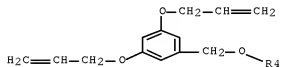
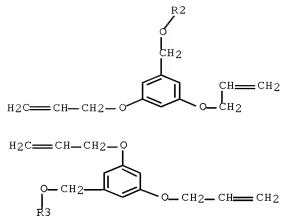
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation)
 ; PREP (Preparation); RACT (Reactant or reagent)

(in synthesis of calix[4]-resorcinarene dendrimer for
 photoresist material)

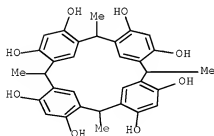
RN 196298-31-4 HCAPLUS

CN Pentacyclo[19.3.1.13.7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
 4,6,10,12,16,18,22,24-octakis[[3,5-bis(2-propen-1-yloxy)phenyl]methoxy]-
 2,8,14,20-tetramethyl- (CA INDEX NAME)





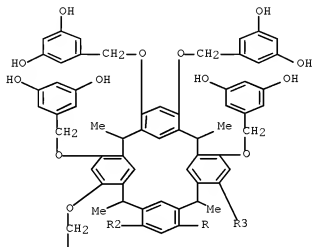
- IT 65338-98-9, Calix[4]resorcinarene
 RL: PRP (Properties); TEM (Technical or engineered material use); USES
 (Uses)
 (neg.-working alkaline developable photoresists based on
 calix[4]-resorcinarene and containing crosslinker and photoacid generator)
- RN 65338-98-9 HCAPLUS
- CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-
 4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl- (CA INDEX NAME)



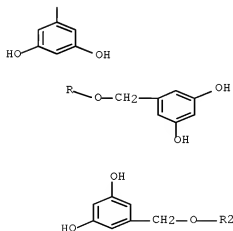
- IT 196298-30-3P
 RL: PRP (Properties); SPN (Synthetic preparation); TEM
 (Technical or engineered material use); PREP (Preparation); USES
 (Uses)

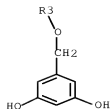
(neg.-working alkaline developable photoresists based on calix[4]-resorcinarene dendrimer and containing crosslinker and photoacid generator)

CN 1,3-Benzenediol 5,5',5'',5''',5'''',5''''',5''''',5''''''-[(2,8,14,20-tetramethylpentacyclo[19.3.1.13.7.19.13.115.19]octacos-
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-
4,6,10,12,16,18,22,24-octayl) octakis(oxyethylene)]octakis- (9CI) (CA
INDEX NAME)



PAGE 2-A





- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
- ST photoresist calixarene dendrimer crosslinker photoacid generator
- IT Crosslinking
(neg.-working alkaline developable photoresists based on calix[4]-resorcinarene and containing crosslinker and photoacid generator)
- IT Dendritic polymers
Oligomers
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(neg.-working alkaline developable photoresists based on calix[4]-resorcinarene dendrimer and containing crosslinker and photoacid generator)
- IT 2937-59-9, 2,6-Bis(hydroxymethyl)phenol 13653-12-8, 4,4'-Methylenebis[2,6-bis(hydroxymethyl)-phenol]
RL: TEM (Technical or engineered material use); USES (Uses)
(crosslinker; neg.-working alkaline developable photoresists based on calix[4]-resorcinarene dendrimer and containing crosslinker and photoacid generator)
- IT 75-59-2, Tetramethylammonium hydroxide
RL: NUU (Other use, unclassified); USES (Uses)
(developer; neg.-working alkaline developable photoresists based on calix[4]-resorcinarene dendrimer and containing crosslinker and photoacid generator)
- IT 13965-03-2, Bis(triphenylphosphine)palladium dichloride
RL: CAT (Catalyst use); USES (Uses)
(in synthesis of calix[4]-resorcinarene dendrimer for photoresist material)
- IT 196298-31-4P
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(in synthesis of calix[4]-resorcinarene dendrimer for photoresist material)
- IT 135710-38-2P 177837-80-8P 182058-69-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(in synthesis of calix[4]-resorcinarene dendrimer for photoresist material)
- IT 65338-98-9, Calix[4]resorcinarene
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(neg.-working alkaline developable photoresists based on calix[4]-resorcinarene and containing crosslinker and photoacid generator)
- IT 196298-30-3P
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(neg.-working alkaline developable photoresists based on calix[4]-resorcinarene dendrimer and containing crosslinker and photoacid generator)

IT 137308-86-2, Diphenyliodonium 9,10-dimethoxyanthracene-2-sulfonate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (photoacid generator; neg.-working alkaline developable photoresists based on calix[4]-resorcinarene and containing crosslinker and photoacid generator)

IT 2150-44-9, Methyl 3,5-dihydroxybenzoate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with bromopropene in synthesis of calix[4]-resorcinarene dendrimer for photoresist material)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 16 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1998:499270 HCAPLUS Full-text

DOCUMENT NUMBER: 129:182011

ORIGINAL REFERENCE NO.: 129:36849a,36852a

TITLE: Three-component negative-type photoresist based on calix[4]resorcinarene, a cross-linker, and a photoacid generator

AUTHOR(S): Ueda, Mitsuru; Takahashi, Daisuke; Nakayama, Tomonari; Haba, Osamu

CORPORATE SOURCE: Department of Human Sensing and Functional Sensor Engineering Graduate School of Engineering, Yamagata University, Yonezawa, Yamagata, 992-8510, Japan

SOURCE: Chemistry of Materials (1998), 10(8), 2230-2234

CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A neg.-working photoresist based on calix[4]resorcinarene (C-4-RA), 4,4'-methylenebis[2,6-bis(hydroxymethyl)phenol] (MBHP) as a cross-linker, and a photoacid generator diphenyliodonium 9,10-dimethoxyanthracene-2-sulfonate (DIAS) has been developed. A clear transparent film was obtained from a 25 weight% C-4-RA solution in 2-methoxyethanol. The photoresist consisting of C-4-RA (65 weight%), MBHP (25 weight%), and DIAS (10 weight%) showed a sensitivity of 4.3 mJ/cm² and a contrast of 2.9 when it was exposed to 365 nm light and postbaked at 120° for 3 min, followed by developing with a 0.1% aqueous tetramethylammonium hydroxide solution at room temperature. The mechanistic study on the formation of images is also discussed.

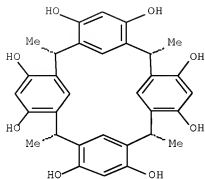
IT 74708-10-4P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation)
 ; TEM (Technical or engineered material use); PREP (Preparation)
 ; RACT (Reactant or reagent); USES (Uses)
 (three-component neg.-type photoresist based on calix[4]resorcinarene, a cross-linker, and a photoacid generator)

RN 74708-10-4 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacosane-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl-, stereoisomer (CA INDEX NAME)

Relative stereochemistry.



IT 211577-39-8P
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (three-component neg.-type photoresist based on calix[4]resorcinarene, a cross-linker, and a photoacid generator)

RN 211577-39-8 HCAPLUS

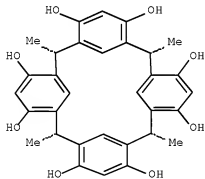
CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl-, stereoisomer, polymer with 5,5'-methylenebis[2-hydroxy-1,3-benzenedimethanol] (9CI) (CA INDEX NAME)

CM 1

CRN 74708-10-4

CMF C32 H32 O8

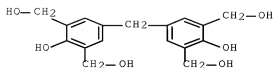
Relative stereochemistry.



CM 2

CRN 13653-12-8

CMF C17 H20 O6



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST photoresist calix resorcinarene crosslinker photoacid

IT NMR (nuclear magnetic resonance)

Photoresists

(three-component neg.-type photoresist based on calix[4]resorcinarene, a cross-linker, and a photoacid generator)

IT 13653-12-8, 4,4'-Methylenebis[2,6-bis(hydroxymethyl)phenol] 137308-86-2, Diphenyliodonium 9,10-dimethoxyanthracene-2-sulfonate

RL: MOA (Modifier or additive use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(three-component neg.-type photoresist based on calix[4]resorcinarene, a cross-linker, and a photoacid generator)

IT 74708-10-4P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(three-component neg.-type photoresist based on calix[4]resorcinarene, a cross-linker, and a photoacid generator)

IT 211577-39-8P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(three-component neg.-type photoresist based on calix[4]resorcinarene, a cross-linker, and a photoacid generator)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 17 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1998:277408 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 129:10630

ORIGINAL REFERENCE NO.: 129:2215a,2218a

TITLE: Positive-working chemical amplification-type photosensitive resin composition containing polyphenols and method for manufacturing resist images

INVENTOR(S): Kato, Koji; Hashimoto, Masahiro; Hashimoto, Michiaki

PATENT ASSIGNEE(S): Hitachi Chemical Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

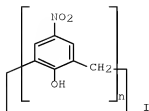
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10115926	A	19980506	JP 1997-210284	19970805 <--
PRIORITY APPLN. INFO.:			JP 1996-221938	A 19960823 <--
OTHER SOURCE(S):	MARPAT	129:10630		

GI



AB A pos.-type chemical amplification-series photosensitive resin composition contains (a) a resin soluble in aqueous alkali solution, (b) polynitrophenols (calixarene) (I; $n = 4-8$), (c) a compound generating an acid upon irradiation with active chemical ray, and (d) a compound possessing on the side chain, a group decomposable by acid which increases solubility in aqueous alkali solution by acid-catalyzed reaction. The content of low-mol. weight component having mol. weight $\leq 2,000$ as polystyrene in the above composition is ≤ 10 weight%,. Also claimed is a method for preparing resist images, in which the coating of above resin composition is irradiated with active chemical ray and then developed. The composition provides resist patterns of good resolution and shows high sensitivity, high degree of resolution, and high heat resistance and is used for microprocessing of semiconductor devices.

IT 60705-62-6P

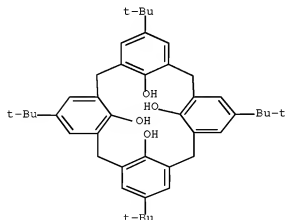
RL: RCT (Reactant); SPN (Synthetic preparation); PREP

(Preparation); RACT (Reactant or reagent)

(pos.-working chemical amplification-type photosensitive resin composition containing polyphenols and method for manufacturing resist images)

RN 60705-62-6 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (CA INDEX NAME)



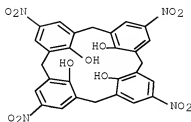
IT 109051-62-9P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(pos.-working chemical amplification-type photosensitive resin composition containing polyphenols and method for manufacturing resist images)

RN 109051-62-9 HCAPLUS

CN Pentacyclo[19.3.1.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetranitro- (CA INDEX NAME)



IC ICM G03F007-039

ICS G03F007-004; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST pos working photoresist alkali sol; semiconductor device manuf

photoresist; polyphenol photoresist chem amplification

photoresist; calixarene pos working photoresist

IT Phenolic resins, preparation

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(novolak; pos.-working chemical amplification-type photosensitive resin composition containing polyphenols and method for manufacturing resist images)

IT Positive photoresists

Semiconductor devices

(pos.-working chemical amplification-type photosensitive resin composition containing polyphenols and method for manufacturing resist images)

IT Metacyclophanes

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(pos.-working chemical amplification-type photosensitive resin composition containing polyphenols and method for manufacturing resist images)

IT 50-00-0, Formaldehyde, reactions 98-54-4 24979-70-2,

Poly(p-vinylphenol)

RL: RCT (Reactant); RACT (Reactant or reagent)

(pos.-working chemical amplification-type photosensitive resin composition containing polyphenols and method for manufacturing resist images)

IT 60705-62-6P 68971-82-4P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(pos.-working chemical amplification-type photosensitive resin composition containing polyphenols and method for manufacturing resist images)

IT 24979-70-2DP, Poly(p-vinylphenol), tetrahydropyranyl-substituted

27029-76-1P, m-Cresol-p-cresol-formalin copolymer 60288-40-6P,

Trimethylsulfonium trifluoromethanesulfonate 109051-62-9P

109081-46-1P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(pos.-working chemical amplification-type photosensitive resin composition

containing polyphenols and method for manufacturing resist images)

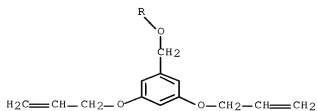
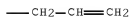
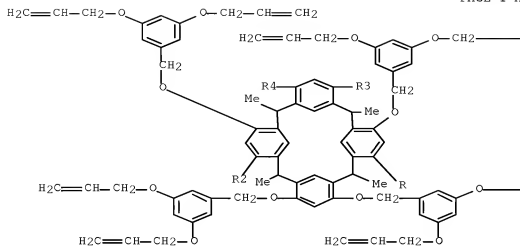
IT 9016-83-5, CN 19
 RL: TEM (Technical or engineered material use); USES (Uses)
 (pos.-working chemical amplification-type photosensitive resin composition
 containing polyphenols and method for manufacturing resist images)

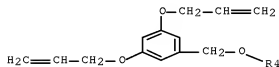
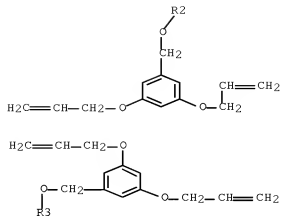
L22 ANSWER 18 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1997:582349 HCAPLUS Full-text
 DOCUMENT NUMBER: 127:270381
 ORIGINAL REFERENCE NO.: 127:52641a,52644a
 TITLE: A positive-working alkaline developable
 photoresist based on benzylether dendrimer and
 a dissolution inhibitor
 AUTHOR(S): Haba, Osamu; Haga, Kohji; Ueda, Mitsuru
 CORPORATE SOURCE: Department of Human Sensing and Functional Sensor
 engineering, Graduate School of Engineering, Yamagata
 University, Yonezawa, 992, Japan
 SOURCE: Polymeric Materials Science and Engineering (1997), 77, 426-427
 CODEN: PMSEGD; ISSN: 0743-0515
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB Dendrimers are polymers with a new mol. architecture, which is characterized
 by possessing central poly-functional core, from which arise successive layers
 of monomer units with a branch occurring at each monomer unit. They are
 monodisperse materials as well as the calixarene, and their mol. weight
 reaches ten thousands as well as the novolak resin. Thus the dendrimers are
 promising material for high sensitive photoresists. We designed a new
 dendrimer which contains phenol groups in the exterior to be soluble in
 aqueous alkaline solution and calix[4]resorcinarene in the interior to
 increase the number of the phenol group even in the lower generation. We now
 report new pos.-working alkaline developable photoresist based on this
 dendrimer.

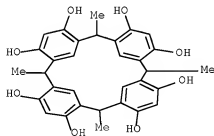
IT 196298-31-4P
 RL: FNU (Preparation, unclassified); RCT (Reactant); PREP
 (Preparation); RACT (Reactant or reagent)
 (pos.-working alkaline developable photoresist based on
 benzyl-ether dendrimer and dissoln. inhibitor)

RN 196298-31-4 HCAPLUS
 CN Pentacyclo[19.3.1.13.7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene,
 4,6,10,12,16,18,22,24-octakis[[3,5-bis(2-propen-1-yloxy)phenyl]methoxy]-
 2,8,14,20-tetramethyl- (CA INDEX NAME)





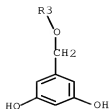
- IT 65338-98-9, Calix[4]resorcinarene
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (pos.-working alkaline developable photoresist based on
 benzyl-ether dendrimer and dissoln. inhibitor)
- RN 65338-98-9 HCAPLUS
- CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacos-
 1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-
 4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl- (CA INDEX NAME)



- IT 196298-30-3P
 RL: SPN (Synthetic preparation); TEM (Technical or engineered
 material use); PREP (Preparation); USES (Uses)
 (pos.-working alkaline developable photoresist based on
 benzyl-ether dendrimer and dissoln. inhibitor)

The chemical structure shows a central benzene ring with four phenyl rings attached at the 1, 3, 5, and 7 positions. Each phenyl ring has a methyl group (Me) at the 2-position. The 4-positions of these phenyl rings are connected to a central benzene ring via ether linkages (-O-CH₂-). The central benzene ring has substituents R, R₂, and R₃ at the 1, 3, and 5 positions, respectively. The 4-position of the central benzene ring is connected to a phenyl ring with a methyl group (Me) at the 2-position and a 3,4,5-trihydroxybenzyl group at the 4-position. The 3,4,5-trihydroxybenzyl group consists of a benzene ring with hydroxyl groups (OH) at the 3, 4, and 5 positions and a -CH₂- group at the 1-position. The -CH₂- group is connected to the central benzene ring via an ether linkage (-O-CH₂-). The 3,4,5-trihydroxybenzyl group is also connected to a phenyl ring with a methyl group (Me) at the 2-position and a 3,4,5-trihydroxybenzyl group at the 4-position. The 3,4,5-trihydroxybenzyl group is also connected to a phenyl ring with a methyl group (Me) at the 2-position and a 3,4,5-trihydroxybenzyl group at the 4-position. The 3,4,5-trihydroxybenzyl group is also connected to a phenyl ring with a methyl group (Me) at the 2-position and a 3,4,5-trihydroxybenzyl group at the 4-position.

The image displays three chemical structures. The top structure is 3,5-dihydroxybenzoic acid, consisting of a benzene ring with a carboxylic acid group (-COOH) at position 1 and hydroxyl groups (-OH) at positions 3 and 5. The middle structure is 2,4-dihydroxybenzyl fluoride, featuring a benzene ring with hydroxyl groups at positions 2 and 4, and a -CH₂-F group at position 1. The bottom structure is 2,4-dihydroxybenzyl alcohol, which has a benzene ring with hydroxyl groups at positions 2 and 4, and a -CH₂-OH group at position 1.



- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
- ST pos alk developable photoresist benzylether dendrimer
- IT Photoresists
(pos.-working alkaline developable photoresist based on benzyl-ether dendrimer and dissoln. inhibitor)
- IT Dendritic polymers
RL: TEM (Technical or engineered material use); USES (Uses)
(pos.-working alkaline developable photoresist based on benzyl-ether dendrimer and dissoln. inhibitor)
- IT 84522-08-7, 2,3,4-Tris(1-oxo-2-diazonaphthoquinone-4-sulfonyloxy)benzophenone
RL: TEM (Technical or engineered material use); USES (Uses)
(dissoln. inhibitor; pos.-working alkaline developable photoresist based on benzyl-ether dendrimer and dissoln. inhibitor)
- IT 135710-38-2 177837-80-8 182058-69-1
RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation, nonpreparative); RACT (Reactant or reagent)
(pos.-working alkaline developable photoresist based on benzyl-ether dendrimer and dissoln. inhibitor)
- IT 67-64-1, 2-Propanone, uses 75-59-2, Tetramethylammonium hydroxide 109-99-9, THF, uses 111-96-6, Bis(2-methoxyethyl)ether 123-91-1, 1,4-Dioxane, uses
RL: NUU (Other use, unclassified); USES (Uses)
(pos.-working alkaline developable photoresist based on benzyl-ether dendrimer and dissoln. inhibitor)
- IT 196298-31-4P
RL: FNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(pos.-working alkaline developable photoresist based on benzyl-ether dendrimer and dissoln. inhibitor)
- IT 106-95-6, 3-Bromopropene, reactions 540-69-2, Ammonium formate 558-13-4, Carbon bromide (CBr₄) 584-08-7, Potassium carbonate (K₂CO₃) 603-35-0, Triphenylphosphine, reactions 2150-44-9, Methyl-3,5-dihydroxy-benzoate 7681-82-5, Sodium iodide (NaI), reactions 13965-03-2, Bis(triphenylphosphine)palladium dichloride 16853-85-3 17455-13-9, 1,4,7,10,13,16-Hexaoxacyclooctadecane 53208-22-3, Diazonaphthoquinone 65338-98-9, Calix[4]resorcinarene
RL: RCT (Reactant); RACT (Reactant or reagent)
(pos.-working alkaline developable photoresist based on benzyl-ether dendrimer and dissoln. inhibitor)
- IT 196298-30-3P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(pos.-working alkaline developable photoresist based on benzyl-ether dendrimer and dissoln. inhibitor)

L22 ANSWER 19 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN
 ACCESSION NUMBER: 1994:334992 HCAPLUS Full-text
 DOCUMENT NUMBER: 120:334992
 ORIGINAL REFERENCE NO.: 120:58693a,58696a
 TITLE: Photosensitive resin composition and resist
 image formation
 INVENTOR(S): Kato, Koji; Kasuya, Kei; Isobe, Asao
 PATENT ASSIGNEE(S): Hitachi Chemical Co Ltd, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05346664	A	19931227	JP 1992-154911	19920615 <--
			JP 1992-154911	19920615 <--

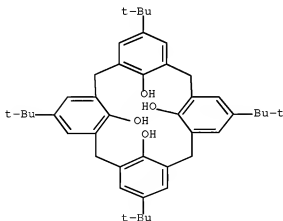
PRIORITY APPLN. INFO.:
 GI For diagram(s), see printed CA Issue.
 AB The composition comprises alkali-soluble novolak resin containing 0-10 weight% low mol. weight composition with mol. weight ≤ 2000 (as polystyrene), a quinonediazide compound, and phenolic cyclic compound I ($n = 4-8$). The composition is coated, exposed, and developed to form images. The composition shows high sensitivity, resolution, thermal-resistance, and suitable for pos.-working resist for integrated circuits.

IT 60705-62-6P

RL: RCT (Reactant); SPN (Synthetic preparation); PREF (Preparation); RACT (Reactant or reagent) (preparation and nitration of)

RN 60705-62-6 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacosapentacyclo[19.3.1.13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (CA INDEX NAME)



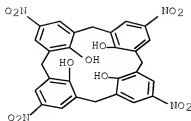
IT 109051-62-9P

RL: PREF (Preparation) (preparation of, pos.-working photoresist containing)

RN 109051-62-9 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacosapentacyclo[19.3.1.13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (CA INDEX NAME)

1(25), 3, 5, 7(28), 9, 11, 13(27), 15, 17, 19(26), 21, 23-dodecaene-25, 26, 27, 28-tetrol, 5, 11, 17, 23-tetranitro- (CA INDEX NAME)



IC ICM G03F007-022
ICS G03F007-023; G03F007-30; H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76

ST resist cyclic phenol compd; quinonediazide novolak resin resist

IT Phenolic resins, uses
RL: USES (Uses)
(novolak, pos.-working photoresist containing)

IT Resists
(photo-, containing novolak resin and quinonediazide compound and cyclic phenol derivative)

IT 27029-76-1, m-Cresol-p-cresol-formaldehyde copolymer 100346-90-5,
m-Cresol-p-cresol-formaldehyde-2,5-xyleneol copolymer 112504-03-7,
m-Cresol-p-cresol-formaldehyde-3,5-xyleneol copolymer
RL: USES (Uses)
(pos.-working photoresist containing)

IT 60705-62-6P 68971-82-4P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP
(Preparation); RACT (Reactant or reagent)
(preparation and nitration of)

IT 109051-62-9P 109081-46-1P
RL: PREP (Preparation)
(preparation of, pos.-working photoresist containing)

L22 ANSWER 20 OF 20 HCAPLUS COPYRIGHT 2009 ACS on STN

ACCESSION NUMBER: 1992:560915 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 117:160915

ORIGINAL REFERENCE NO.: 117:27633a, 27636a

TITLE: Positive-working photoresist composition

INVENTOR(S): Kawabe, Yasumasa; Tan, Shiro; Kuboyama, Reiko

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 03279957	A	19911211	JP 1990-80027	19900328 <--

PRIORITY APPLN. INFO.:

JP 1990-80027

19900328 <--

GI For diagram(s), see printed CA Issue.

AB The title pos.-working photoresist composition contains the 1,2-naphthoquinonediazido-5-(and/or-4-) sulfonic acid ester of the polyhydric compds., (I; R1 - R4 = H, OH, halo, alkyl, aryl, aralkyl, alkoxy, alkenyl, aryl, alkoxy carbonyl, CN, NO2; ≥ 1 of R2 - R4 is OH; R5, R6 = H, alkyl, aryl; X = single bond or OCH2; n = 3-8) or (II; R7 - R10 = same as R1 - R4 above; \geq of R7 - R10 in OH; R11, R12 = H, alkyl, aryl; X = single bond, OCH2; n = 3-8) and an alkali-soluble resin. The photoresist has high sensitivity and give high resolution patterns.

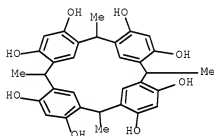
IT 65338-98-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation and reaction of, in preparation of photoresist component)

RN 65338-98-9 HCAPLUS

CN Pentacyclo[19.3.1.13,7.19,13.115,19]octacosal-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-4,6,10,12,16,18,22,24-octol, 2,8,14,20-tetramethyl- (CA INDEX NAME)



IC ICM G03F007-022

ICS H01L021-027

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 76

ST pos photoresist naphthoquinodiazidosulfonate

IT Semiconductor devices

(fabrication of, high resolution photoresist for)

IT Resists

(photo-, containing naphthaquinonediazidosulfonic acid ester, pos.-working)

IT 1506-76-9P 65338-98-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation and reaction of, in preparation of photoresist component)

IT 143637-17-6P

RL: PREP (Preparation)

(preparation of, as photoresist component)

IT 143637-35-8P

RL: PREP (Preparation)

(preparation of, photoresist composition containing)

=> d his nof

(FILE 'HOME' ENTERED AT 11:22:26 ON 19 MAY 2009)

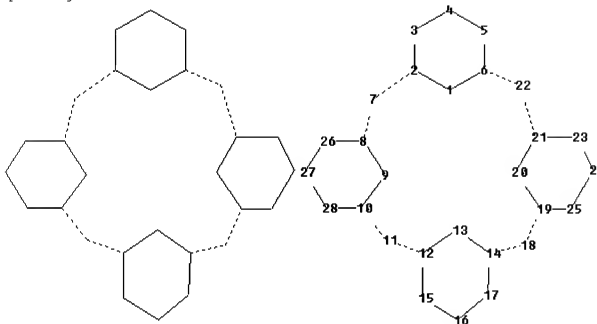
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L2      50 SEA SSS SAM L1
L3      STRUCTURE UPLOADED
        D

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Uploading L2.str



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ring nodes :
1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
24 25 26 27 28
ring bonds :
1-2 1-6 2-3 2-7 3-4 4-5 5-6 6-22 7-8 8-9 8-26 9-10 10-11 10-28 11-12
12-13 12-15 13-14 14-17 14-18 15-16 16-17 18-19 19-20 19-25 20-21 21-22
21-23 23-24
24-25 26-27 27-28
exact/norm bonds :
2-7 6-22 7-8 10-11 11-12 14-18 18-19 21-22
normalized bonds :
1-2 1-6 2-3 3-4 4-5 5-6 8-9 8-26 9-10 10-28 12-13 12-15 13-14 14-17
15-16 16-17 19-20 19-25 20-21 21-23 23-24 24-25 26-27 27-28
isolated ring systems :
containing 1 :

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Match level :

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1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom
11:Atom 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom
20:Atom 21:Atom

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22:Atom 23:Atom 24:Atom 25:Atom 26:Atom 27:Atom 28:Atom

L4 50 SEA SSS SAM L3
 L5 17874 SEA SSS FUL L3
 SAVE L5 LEE282REGL2/A

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 SEL RN

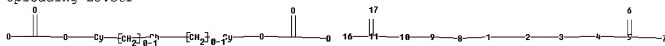
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 BI OR 5292-43-3/BI OR 625122-37-4/BI OR 66003-78-9/BI OR
 75-07-0/BI)
 L8 1 SEA ABB=ON PLU=ON L5 AND L7
 D RN

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 L9 6250 SEA ABB=ON PLU=ON L5
 L10 QUE ABB=ON PLU=ON RESIST OR RESIST# OR PHOTORESIST? OR PHOTO
 (2A) RESIST?
 L11 89 SEA ABB=ON PLU=ON L9 (L) L10
 L12 3317 SEA ABB=ON PLU=ON L9 (L) PREP+ALL/RL
 L13 3706 SEA ABB=ON PLU=ON L9 (L) RACT/RL
 L14 33 SEA ABB=ON PLU=ON L11 AND L12 AND L13
 L15 21 SEA ABB=ON PLU=ON L14 AND (AY<2006 OR PY<2006 OR PRY<2006)
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FILE 'REGISTRY' ENTERED AT 11:45:51 ON 19 MAY 2009
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 D

Uploading L3.str



chain nodes :

1 2 3 4 5 6 7 8 9 10 11 16 17

chain bonds :

1-2 1-8 2-3 3-4 4-5 5-6 5-7 8-9 9-10 10-11 11-16 11-17

exact/norm bonds :

2-3 3-4 4-5 5-6 5-7 8-9 9-10 10-11 11-16 11-17

exact bonds :

1-2 1-8

Match level :

1:Atom 2:CLASS 3:Atom 4:CLASS 5:CLASS 6:CLASS 7:CLASS 8:CLASS 9:Atom
 10:CLASS

11:CLASS 16:CLASS 17:CLASS

Generic attributes :

3:

Saturation : Unsaturated

9:
Saturation : Unsaturated

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L17      0 SEA SUB=L5 SSS SAM L16
L18      2 SEA SUB=L5 SSS FUL L16
          D SCAN
          SAVE TEMP L18 LEE282REGL3/A

      FILE 'HCAPLUS' ENTERED AT 11:47:19 ON 19 MAY 2009
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          D SCAN TI HIT
L20      21 SEA ABB=ON PLU=ON L15 AND L10
L21      2 SEA ABB=ON PLU=ON L19 AND L10
L22      20 SEA ABB=ON PLU=ON L20 NOT L21
          D QUE L21
          D L21 1-2 IBIB ABS HITSTR HITIND
          D QUE L22
          D L22 1-20 IBIB ABS HITSTR HITIND

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